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CARDIAC COMPLICATIONS IN GONORRHŒAL RHEUMATISM.[1]

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Inasmuch as many are in doubt as to whether gonorrhœal rheumatism ever affects the heart, I propose to review briefly the literature of the subject, to give the results of a critical examination of the histories of twenty-seven cases of gonorrhœal rheumatism, and to relate somewhat in detail the history of a remarkable case in which I believe the urethral affection was closely connected with the morbid processes which subsequently attacked the pericardium, the endocardium, and the pleura.

I shall not deal with the question as to whether gonorrhœal rheumatism exists, whether the affection we know by that name is a real rheumatism, or whether, if it be a rheumatism, it is caused by a gonorrhœa. I shall merely state that there is a form of joint affection associated with a discharge from the urethra, and that this joint affection differs from ordinary acute or subacute rheumatism in certain characteristics, one of which is said to be that it is never associated with affections of the heart.

In English and American treatises little mention is made of the possibility of the connection. Howard, in his article on "Gonorrhœal Rheumatism" in Pepper's *System of Medicine*, speaks of the connection as being a point on which there is much difference of opinion. He admits

[1] A paper read at the annual meeting of the Canadian Medical Association at Toronto, Sept. 1890.

that cases have been reported which appear to have been authentic cases of gonorrhœal endocarditis, but remarks that it would be impossible at times to distinguish a polyarticular acute gonorrhœal rheumatism from ordinary acute articular rheumatism, and he mentions the possibility of the heart symptoms being due to pyæmia.

Cases have been from time to time recorded in the journals. The connection is alluded to by Davies Colley, who in an essay on "Gonorrhœal Rheumatism" in *Guy's Hospital Reports*, spoke of one form of the disease which he called the inflammatory form, and which is specially liable to attack fibrous structures not connected with joints, *e. g.*, plantar fascia, the sclerotic coat of the eyeball, the iris, the pericardium, and the endocardium, the attack on these last two being usually associated with gonorrhœal arthritis.

In an article on the same subject in the same publication Dr. Pye Smith analyzed the histories of twenty nine cases of gonorrhœal rheumatism and found that in one of them a basic systolic murmur was reported, which he passed over as being most probably of functional origin.

In 1884 a case was reported by Railton of a man, aged twenty-one, who after having suffered for six weeks from a gonorrhœal discharge, was attacked with sore throat, fever (102°), headache. Four days afterward there was pain in the right wrist and sour-smelling perspiration, but no cardiac implication. Two days after this there were evidences of endocarditis. He recovered after some weeks' illness, and the murmurs were said to have disappeared.

The subject is dealt with more fully by French writers. Marty, in 1876, published an article in the *Archives Générales de Médecine*, in which the literature of the subject up to date was reviewed and the histories of nine cases were given as well as one which he observed himself. One of these cases is of particular interest, as it resembles my case in the comparative insignificance of the joint affection. It is that reported by Lacassagne. The patient was a young man who entered hospital with diarrhœa as well as a gonorrhœa. Two days after admission there was sudden pain in the chest, physical signs of endocarditis, and elevation of temperature. No joint pain was observed.

Marty's own case presented the following history:

D., aged twenty-two. No rheumatic or cardiac antecedents. When five years old he was subject to palpitations, but for several years past he has been in the habit of lifting heavy weights without any trouble. In the fifth week of his gonorrhœa he had repeated rigors and intense headache, and a few days afterward it was noticed that there was a systolic murmur at the base of the heart. This was followed by a rise of temperature, presternal pain and vomiting followed by palpitation. The patient eventually recovered, though the murmur remained.

Marty's general conclusions are as follows:

Gonorrhœa may be complicated with inflammation of all the serous membranes, and may act in a direct way on each of them. Rheumatism is by no

means a necessary middle term between the specific lesion and the lesion of the serous membrane, although the cases of coexistence of the two complications are most frequent. The cardiac complications are rare. Of the several orifices the aortic one is most commonly attacked. Endocarditis appears to have occurred as frequently as pericarditis, if not more so.

In 1884 a case was recorded by MM. Derignac and Moussons in the *Gazette Médicale de Paris:*

A man, aged twenty-five, in the fourth week of his gonorrhœa was seized with pain in his left shoulder which soon shifted to his right shoulder and there remained. No other joint was affected. There was no previous history of joint affections, or family history of rheumatism. He had never had scarlet or typhoid fever, and he presented no signs of syphilis, alcoholism, or chorea. Two weeks later there was a sudden rise of temperature (102.6° F), with cardiac distress. Well-marked systolic murmur. The symptoms subsided but the bruit remained, and there was subsequent atrophy of the deltoid and brachial muscles.

In Germany the subject has attracted more attention than elsewhere, several important monographs having been published during the last twenty years by Nolen, Pfuhl, Loeb, Guntz, and others. The first of these has collected fifteen cases of so-called heart complications. I have not been able to see this monograph, but I infer from the criticism of Loeb that the writer includes cases in which no further evidences of cardiac disease existed than reduplication of the first sound. Such cases cannot be included under the category of organic lesions, and the number of his cases must therefore suffer reduction.

Quite recently the subject has been dealt with somewhat exhaustively by Gluzinski, an abstract of whose paper is given in the Vienna correspondence of the *British Medical Journal* for the early part of 1889. It is stated that Brande, in 1854, published two cases of endocarditis and pericarditis, respectively, in connection with gonorrhœal rheumatism, and that Sigmund, in 1858, published two cases. Gluzinski himself collected thirty-one cases, and derived from them the following conclusions: 1. Pericarditis as well as endocarditis might supervene in the course of gonorrhœa. 2. These may develop after gonorrhœal rheumatism, but also without the presence of such an affection. 3. The complaint sometimes assumes the character of a severe infectious disease, as in endocarditis ulcerosa, and runs an acute course, and sometimes gives rise to failure of the heart. Gluzinski believes that the endocarditis is the result of the action of microörganisms on the valves, and he quotes a case published by Weichselbaum where gonorrhœa was complicated with endocarditis and cardiac failure, and the streptococcus pyogenes was found in the vegetations of the valves.

In eight of Gluzinski's cases the symptoms were mild. The patients complained of "stitch" in the left chest and palpitations. There was accelerated and increased action of the heart, and frequently also a slight pericardial râle. In the majority rheumatism was either quite

missed or it came on after the cardiac affection had set in. In all the patients there was gonorrhœa of long standing.

This is, therefore, a summary of the literature of the subject. I pass on to what is more interesting—namely, clinical experience.

The medical case-books of the Montreal General Hospital for the last eight years contain the histories of twenty-seven cases—twenty-six males and one female—which have been diagnosed as gonorrhœal rheumatism. Possibly some more cases of the kind may lie concealed among the numerous histories of so-called subacute rheumatism. Of these twenty-seven cases, physical signs of cardiac disease were present in six cases, but of this number two cases can be excluded on the ground that there was a history of acute rheumatism previously to the first attack of gonorrhœa. A history of scarlet fever in childhood, for a like reason, excludes a third case, leaving three cases in which it is probable that the heart affection depended upon a gonorrhœa.

CASE I. *History of acute rheumatism in childhood, very probably with cardiac complications. In adult life a rheumatism, probably gonorrhœal. Systolic murmur present.*—F. J., æt. twenty-five, laborer, admitted into the Montreal General Hospital June 3, 1888, under Dr. Wilkins, complaining of pain in both knees and in the left ankle. He has had attacks similar to the present one, the first when he was twelve years old, the second when he was nineteen. After the first of these attacks he began to suffer from palpitation and faintness on exertion. When twenty-three contracted a gonorrhœa for the first time, and six months ago contracted another. On admission the joints involved were painful, bnt not swollen or red. A urethral discharge is present. There is a soft, blowing systolic murmur, loudest at apex and transmitted as far as the axilla.

CASE II. *History of acute rheumatism in childhood. Gonorrhœa at the age of eighteen, followed by arthritic pains. Evidences of disease of the mitral valve.*—J. H., æt. nineteen, admitted May 24, 1885, under Dr. Wilkins. Pain and swelling of both knees. Thirteen years ago had acute rheumatism. Contracted gonorrhœa one year ago, and the discharge has been present ever since. Never suffered from dyspnœa. The present illness began six weeks ago, with pain in the right hip, then in the right knee and in soles of the feet. No history of exposure to cold. Pulse irregular and intermittent. No perspiration. Urethral discharge. The cardiac action is diffused. Apex displaced a little downward and outward, and cardiac dulness slightly increased. Loud, harsh presystolic murmur; a systolic murmur also. After a few days in hospital the pains subsided and the patient was discharged.

In these two cases I regard the occurrence of gonorrhœal rheumatism as accidental, and in no way connected with the valvular disease. It may be fairly assumed that in these patients the injury to the valve occurred in childhood. It is curious to note, however, that in both cases the rheumatism took the form most commonly found in connection with gonorrhœa, and not that of acute rheumatism. The fever was slight,

and there was no sweating. The joint affection was not general, and in one of the cases it was limited to one knee and one ankle; in the other to one hip, one knee, and the plantar fascia, and in neither case did any metastasis occur.

CASE III. *Acute articular pains supposed to be of gonorrhœal origin. Evidences of cardiac enlargement and endocarditis. History of scarlet fever in childhood.*—S. R., æt. twenty-six, a glassblower, was admitted to the General Hospital, April 23, 1890, under the care of Dr. Ross, complaining of pain in the left ankle and knee. He had had scarlet fever and measles in childhood, but he had never had rheumatism.[1] About a month or six weeks before admission he contracted a gonorrhœa; the discharge was copious, but had nearly ceased when the joint pains began. A week before admission he had been drinking and had been much exposed to the weather. The joints attacked were the knees, ankles, and elbows. The joint affection was not severe and subsided in four days.

State of the heart: The impulse is seen and felt one inch below, and half an inch outside the nipple. Dulness begins at the third rib above, and extends transversely from the border of the sternum to one inch outside the nipple. A faint systolic blowing sound can be heard at the apex, and one inch externally.

The patient left the hospital in one month, the joint affection having entirely subsided. There was evidently nothing like suppuration in the joint.

CASE IV. *Two distinct attacks of gonorrhœa. Each followed by arthritis; the first by conjunctivitis and swollen testicle. No history whatever of rheumatism or of scarlet fever. Systolic murmur at the apex of heart.*—J. McN., æt. twenty-four, admitted September 4, 1889, under Dr. Wilkins. Dull pain in left hip and ankle. Purulent urethral discharge. No history of rheumatism. Good health until two years ago, when he had an attack of gonorrhœa which was followed very soon by pains in the left ankle. He was laid up for four months, and was thought to have recovered completely. He was well until three months ago, when he had a new attack of gonorrhœa, followed as before by joint pains. The left ankle began gradually to be painful one week after the discharge appeared. At about the same time the right eye became painful and light became intolerable. He was treated for gonorrhœal ophthalmia in the out-patient department of the hospital. In five weeks the eye was well but the discharge was unchecked, and he suffered from obscure joint pains until a fortnight before admission, when the left hip became very painful. At the outset of the gonorrhœa the testicle had been swollen. There was no fever. Severe pain in left hip. Thick urethral discharge.

Heart: No increased area of dulness. A soft blowing systolic murmur was heard at the apex but was not transmitted in any direction. The patient left the hospital fairly well in about a fortnight.

There can be, in this case, no doubt of the gonorrhœal origin of the two articular attacks. There was no fever, no sweating. The attack was gradual, and there was never any severe pain. In his first attack

[1] No mention is made of his having suffered from cardiac symptoms previously to his admission to hospital.

but one joint was involved, and with it the conjunctiva, a most significant coincidence, In the second attack one hip and one ankle alone were attacked. There was no metastasis. The strongest evidence lies in the fact of the attack having followed twice in the course of a recent gonorrhœa.

The heart affection here was evidently a slow endocarditis possibly dating from the first attack, arising as it does in ordinary rheumatism without giving rise to symptoms, and so escaping attention.

CASE V. *Gonorrhœal discharge of three weeks' standing. Acute arthritis in left elbow ending in suppuration and subsequent anchylosis. Endocarditis possibly recent. No history of rheumatism.*—J. S., æt. twenty-one, admitted Sept. 30, 1887, under Dr. Ross. Exposure to cold three days previously followed by chills, slight sore throat, and transient pain in the right thumb. On the following day pain and swelling of left elbow-joint. Has never had rheumatism in any form. A gonorrhœal discharge present for the last three weeks. Has had no headache or sweating. On admission the fauces and uvula were found to be somewhat red, but there was no tonsillitis. Pulse 100; temp. 100.4°. Physical signs of lungs negative.

The apex-beat of the heart is in its usual position and the extent of cardiac dulness is not increased. A rough blowing systolic murmur is heard over the mitral area, most distinctly just over the apex. It is transmitted to the anterior axillary border, and can be heard at the back between the midline and the dorsal border of the scapula. A softer systolic murmur, blowing in character. is heard in the second intercostal space close to the left border of the sternum.

On the fourth day of the illness there were some fugitive pains in the left wrist. Temperature fell to normal. During the next fortnight the left elbow-joint became distended with fluid, which, on aspiration, proved to be pus. The case was transferred to the surgeons. The patient recovered with a stiff joint. During his stay in hospital the heart-murmur diminished in intensity but never disappeared.

There is nothing in this history to warrant the assumption that ordinary acute rheumatism was the cause of the heart affection. There is no history of a previous attack. Exposure to cold is well recognized as the exciting cause of gonorrhœal, as well as of ordinary acute rheumatism. A one-joint affection ending in suppuration can hardly be acute rheumatism. It must be either gonorrhœal rheumatism or a pyæmia, and it is highly probable that the distinction between these two morbid states is merely one of degree. Cases of gonorrhœal rheumatism ending in pyarthrosis are very rare but they have been described. Fifty years ago Vidal (de Cassis) mentioned this termination in his famous treatise on the venereal diseases and gave the particulars of a case ending like this in suppuration and anchylosis.

CASE VI. *Gonorrhœa; rigors; slight joint pains; sudden and urgent dyspnœa; pericarditis; endocarditis; pleuritis; recovery with persistent mitral murmur.*—D. B., æt. twenty-two, a merchant's clerk, of fair complexion,

short stature, and very muscular build, had alway been in good health until May 8, 1890, when after a long, cold, wet drive he became thoroughly chilled, and when he alighted from the vehicle he noticed that his knees had become stiff and painful. He took some hot brandy and water and was obliged to go to bed immediately, feeling very ill and uncomfortable. He slept badly, owing to his chilly sensations as well as to the pains he felt in the knees. These pains were not very severe and were not relieved by resting—in fact, he found some relief in moving them about. On the following morning, though he felt tired and uncomfortable, he went to his office, but in the middle of the day he began to experience a sense of oppression in the chest and was obliged to rest that afternoon, though he did not take to bed. The next day was Saturday. He returned to the office in the morning, did all that was required of him, went home to dinner, and in the afternoon took part in the inspection of the volunteer corps to which he belonged. He felt a little stiff in the knees at starting but at that time felt no shortness of breath or cardiac pain. There was a great deal of marching about and as the afternoon wore on he felt very stiff in the knees and began then, for the first time, to feel pain in the wrist and the ankles. The next day being Sunday he rested in bed all day suffering merely from slight pains and stiffness in his knees, the pain having entirely left the wrists and ankles. On the following (the fifth) day on attempting to dress he found himself very short of breath, and during the day this distress increased rapidly. He found sitting more comfortable than lying and soon he could only breathe comfortably when standing. He now sought advice, and Dr. Herbert Reddy, who was summoned, found him in a state of urgent dyspnœa and breathing forty to the minute. The pupils were widely dilated, and he wore an expression of deep distress and anxiety. The pulse was rapid, but the temperature was not very high. There were no physical signs, and the joint symptoms had at that time completely disappeared. The general appearance was that of a patient in the early stage of a severe pneumonia.

On the afternoon of the following (sixth) day, when I saw him in consultation at Dr. Reddy's request, the patient was in less distress than on the previous day. There was still orthopnœa. Respirations were 36 and the temperature 99°. The resemblance to the appearance of a patient in the early stages of pneumonia was very remarkable, but there were no physical signs in the lungs. Over the base of the heart a double friction-murmur was distinctly audible, extending over an area of about an inch and a half in diameter, with its centre at the middle of the junction of the third costal cartilage with the sternum.

The heart's action was excited but regular, and there was no increase in the area of superficial cardiac dulness.

With such symptoms and physical signs a diagnosis of acute pericarditis was made, and it was not until this stage of the examination was arrived at and a cause for the pericarditis was sought, that he told us about the joint pains, and that he was suffering from a gonorrhœal discharge of some five weeks' standing.

On the following day (seventh) the friction-murmur could not be detected. From the eighth to the tenth day of the illness, when he was under Dr. Reddy's care, the dyspnœa gradually subsided, and the friction-murmur was not again detected.

On May 18th (eleventh day) he was admitted to the Montreal

General Hospital, when the following condition was noted: Patient somewhat pale; pupils dilated; no manifest dyspnœa while at rest; respirations 20; no swellings of the joints; dorsal decubitus. The anxious expression observed at my first examination is no longer present. There is no constant cardiac pain or palpitations. The patient complains of pain merely when he takes a very long breath. The apex-beat of the heart is in its normal position. The heart's action is slow and deliberate. The area of superficial cardiac dulness is not increased, and there is no diminution of the intensity of the cardiac sounds. A systolic murmur is faintly audible at the apex, but it is not heard around the chest. At times when the patient is lying upon his back this murmur is not audible, but it becomes so when he sits up and leans forward. At the base of the heart both the cardiac sounds are quite clear; the pulse beats at 66, regular and compressible.

A urethral discharge has been present for the last six weeks. It had nearly ceased at the time he went out driving, but after the chilling it returned, owing, he thought, to the large quantity of hot brandy and water which was given to him at the time. This is his second attack of gonorrhœa, the first occurred some months previously, and was accompanied by a swollen testicle, but no joint pain. The urine is of normal quantity and specific gravity, and contains no albumin. Temperature 99°.

There is no evidence of any previous illness showing a tendency to rheumatic affections, no scarlet fever, no tonsillitis, no chorea.

Family history: With the aid of the patient's brother, who is a medical man, I was able to look into the family history thoroughly. On the father's side there is no trace of any rheumatic or gouty tendency whatever. On the mother's side, of five uncles and aunts of the patient, one aunt is the subject of heart disease, and the two sons of another aunt have had, the one a chronic affection of the heart and the other recurrent attacks of acute rheumatism.

June 2 (25th day). He has now been a fortnight in hospital, and up to to-day has been doing well. The temperature has been normal or nearly normal; the pulse quiet. There has been very little dyspnœa. The systolic murmur has been becoming more distinct, and it is now plainly audible in any position of the body. During the day the temperature rose to 100°, and he complained of epigastric distress.

4*th* (27th day). The evening temperature has gone just beyond 100° for the last three days. Pains in the back of the neck and about the shoulders. Flatus in abdomen troublesome.

7*th* (30th day). Temperature rises to above 100° at night, and last night it touched 101°. Pain on taking a long breath. Orthopnœa. No new physical signs.

8*th* (31st day). Evening temperature was 102°. Dulness on percussion at the base of the right lung, weakened breath sounds and diminished vocal resonance. At the left base there is a slight loss of resonance. The heart's action is now rapid, the sounds are somewhat muffled. Respiration 24.

9*th* (32d day). To-day a distinct to-and-fro murmur is heard over the præcordium, with its maximum intensity at the junction of the fourth costal cartilage with the sternum on the left side, and it is audible at any point within a radius of an inch and a half from here. The limits of cardiac dulness are not perceptibly increased. There is evidently

fluid in both pleura, for on both sides of the chest there is now flatness as far up as the angles of the scapulæ; breath-sounds absent. On the left side over the dull area there is very distant ægophony.

10*th* (33d day). The temperature reached its highest (104°) last night. Great restlessness and discomfort. Physical signs unchanged, except that the cardiac dulness is increasing toward the right side, extending to half an inch beyond the right border of the sternum.

He complains greatly of gastric eructations, and the cardiac pain and dyspnœa interfere with sleep.

12*th* (35th day). The temperature has been falling. Cardiac dulness is unchanged, but the to-and-fro murmur is no longer present. Sounds muffled.

13*th* (36th day). The sounds less muffled. A systolic murmur again audible just below the nipple.

18*th* (41st day). There is general improvement. Very slight rise of temperature in the evenings. Ægophony not so well marked. Systolic murmur now very plain.

July 9. Went to his home in the country to-day. From the date of last note he improved very rapidly, especially after he was allowed to move about. When he left the hospital the cardiac dulness was of normal extent, and though the ægophony entirely disappeared, there still remained a margin of dulness at both bases. The systolic murmur presented its old character, being limited strictly to the apex. The urethral discharge gradually disappeared.

Such is the history of the case which carries with it the greater part of the evidence I have to bring before you in favor of the view that gonorrhœal rheumatism may set up cardiac affections. A young man, not personally nor hereditarily disposed to rheumatism, in the fifth week of his second attack of gonorrhœa, is exposed to cold, suffers from a succession of rigors, followed by slight joint pains, chiefly in the knees, not of a character sufficiently severe to confine him to bed. After four days these transient joint pains leave him and he is suddenly attacked with præcordial pain and dypnœa. The physical signs of pericarditis are recognized. Nothing more is heard of the articular pains, but the urethral discharge continues and evidences of pericarditis disappear. On the thirtieth day of the illness fresh effusion takes place in the pericardium, and in the pleura the same process is noticed. Gradual absorption of effused fluid takes place. Finally, all physical signs disappear except a well-marked apex systolic murmur.

Either it was a case of gonorrhœal rheumatism in which the endocardium, pericardium, and the pleura were attacked, or it was an ordinary case of acute rheumatism with ordinary complications, and the gonorrhœa was merely an accidental circumstance. I believe that the gonorrhœa was the cause of the attack on the serous membranes, for these reasons:

1. There was no previous history of acute rheumatism nor of any rheumatic manifestations whatever; no tonsillitis, no chorea, no growing

pains. His mother assured me that up to the present illness he had been perfectly well.

2. The fact of cold having acted as an exciting cause in no way affects the probability of gonorrhœa having been the predisposing cause. In the twenty-seven cases of gonorrhœal rheumatism I have collected cold was put down as the exciting cause in seven, and this is no new observation.

3. Pyrexia was by no means prominent. For the first fourteen days the temperature scarcely went over 100°. At the time the pleurisy and pericarditis were discovered there was elevation, but not at the outset of the disease, as would most probably have been the case in ordinary acute rheumatism.

4. The joints were involved to a very slight degree. He was never obliged to take to bed on account of joint pains, and at the very height of the attack he was still able to walk about. The pain was mainly felt in the knees, and there was no metastasis. The wrists and ankles were merely stiff. We know that in children the joint affection of rheumatism bears no relation to the severity of the heart affection, but in adults one does not commonly see cardiac affections follow joint affections so slight as these were.

5. There was no sweating at any period of the disease.

The conclusions which may be drawn from this paper are as follows:

1. That a review of the literature of gonorrhœal rheumatism shows that although a considerable number of cases have been recorded to prove the connection between gonorrhœa and affections of the serous membranes, yet those histories which will bear close inspection are very few. In some, the actual presence of the heart lesion is open to doubt, and in others the existence of ordinary acute rheumatism cannot be excluded.

2. That although of remarkably infrequent occurrence, cases do occur where the poison of gonorrhœa attacks the endocardium, the pericardium, and the pleura as well as the fibrous structure of joints.

3. That if such be the case it is the duty of physicians to regard gonorrhœa in a more serious light, to confine patients to bed whenever the symptoms are at all severe, to examine more frequently the condition of the heart, and to ascertain in cases of chronic valvular affection where there is no history of acute rheumatism, whether a possible cause may exist in a bygone gonorrhœa.

My thanks are due to my colleagues, Drs. Ross, Wilkins, and Molson of the medical staff of the Montreal General Hospital, for permission to make use of their case-books, as well as to Dr. Vidal, my house physician, for the aid he afforded me in collecting the clinical histories used in the preparation of this paper.

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THE ORGANIZATION OF AN OPERATION.

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Our text-books on surgery, in treating on Operations, give directions as to the need of an ample number of assistants and the assignment and nature of the duties of each, of preparing the room, etc.; but so far as I know, they do not insist on the proper method of organizing the operation as to the minute written or printed directions to the nurse and to the physician in charge in any systematic way. For the want of this the family, the physician, and the nurse do not know what is expected of each, and often the needed preparations are not made until the surgeon arrives in person.

In my earlier professional life, before doing an operation I was compelled to sit down and make a list of what was wanted, and also to give verbal or written directions to the nurse, the family, and the physician. At each operation this laborious process had to be repeated, and the chances were that I would forget some one or more of the details of the preliminary preparation, or some minor instrument or necessary appliance that I wanted during the operation. Gradually the matter systematized itself in my mind, and some twelve or fifteen years ago I prepared a blank somewhat similar to the one presented below. I have been so often asked for a copy of this blank that I have finally decided to publish it in this article, and in addition Messrs. Lea Bros. & Co. have kindly consented to publish the blank in pads of fifty each, so that they may be available to any surgeon who desires to use them. Probably others have adopted some more or less similar plan but I know of none that has been published.

My custom is, before each operation, to take one of these blanks, run over its items and check those that are applicable to the case. I then send or hand it to the physician in attendance, with the request that everything shall be prepared in accordance with it. If it is a private case of my own I hand it to the nurse and expect her to attend to the items of the first two divisions, and I check and so order from the drug-store such appliances, dressings, or drugs of the third and fourth divisions as I require.

OPERATION BLANK.

.....18

For the operation on M (name and address) on (date) at o'clock, please see that such of the following preparations as are checked are all made beforehand.

.....M.D.

I. THE PATIENT.

1. The day before the operation shave the parts; scrub well over a wide area with soap and water; then with ether; then with sublimate solution, 1:1000; then apply a sublimate gauze dressing and bandage to remain until the operation.

2. See that the bowels are opened by a gentle purge given the previous evening, and if need be by a morning enema.

3. Wash out the vagina and rectum.

4. For breakfast a cup of clear soup (no bread or other solid food), and no food later.

5. Have the patient in bed (in an adjoining room, if possible) a half-hour before the operation, with night-dress, chemise or undershirt, drawers, and stockings only.

II. The Room and Bed.

1. Take up the carpet, remove curtains, draperies, and all furniture except a bureau, washstand, table, and two cane-seat or wooden chairs; clean the room; clean the walls and ceiling with a brush or broom covered with a towel; then wash the floor, woodwork of walls, and furniture with carbolic solution, 1:40; have clean carpet strips ready to lay on the floor after the operation.

2. A firm four-legged table, with three old blankets and a pillow in front of a window (north light preferred).

3. Remove the window-curtains, and screen the lower sash by paper or towels.

4. Four toilet tables for instruments, dressings, etc.

5. Protect the floor.

6. Two blankets on the bed instead of sheets.

7. Protect the bed by rubber cloth and a draw sheet.

8. Ten hot-water bottles well corked.

9. Hoops to support the bed-clothes.

10. Waste water bucket.

11. Five china basins and one tin basin.

12. Three sheets and fifteen towels, to be wrung out of sublimate solution, 1:1000, the night before the operation and rough-dried.

13. Two dozen large safety-pins.

14. Tumbler, tablespoon, and teaspoon.

15. Nail-brush.

16. Two pitchers of cooled boiled water.

17. Plenty of hot water.

18. A sheet of stout wrapping-paper.

19. 1½ yards white flannel.

20. Fresh clear soup and milk.

21. Olive oil, two ounces.

22. A half-pint of vinegar.

III. Dressings, etc.

1. One can of Am Ende's sublimate gauze.

2. One roll of Hartmann's wood-wool dressing.

3. A piece of "rubber dam" x inches.

4. Four bandages, inches wide.

5. Two ounces borated cotton.

6. ¼ pound of "Globe antiseptic wool."

7. Bed-pan.

8. Catheter.

9. Thermometer.

10. Hypodermatic syringe.

11. A bent glass feeding-tube.

IV. Medicines, etc.

1. Carbolic acid (No. 1), fl℥ vss in a half-gallon bottle of distilled water.
2. Carbolic acid (No. 1), fl℥ vj.
3. Two ½ pound cans Squibb's ether.
4. Chloroform, fl℥ iv.
5. Liq. morph. sulph., fl℥ j.
6. Four suppositories, 1 grain opium each.
7. Spirits ammon. aromat., fl℥ ij.
8. Alcohol, Oj.
9. Ten-grain powders of sulfonal in no. 4.
10. Brandy, fl℥ iv.
11. Lime-water, fl℥ iv.
12. Sublimate tablets for 1:1000 solution, no. xx.

I would like to add a few words in explanation of some of these directions, lest they should be obscure or misunderstood.

Part I.

(4) For the meal before the operation I always prefer a cup of clear soup rather than milk, with no bread or other solid food. My reason for this is that the anxiety which is so common and so natural before an operation frequently disturbs the digestion to such an extent that even milk curdles in the stomach, is not digested, and is often vomited in large curds.

Part II.

(6) As after the operation the patient is apt to be in more or less of a condition of shock and to feel the cold, I always prefer that he shall lie between blankets instead of sheets.

(8) I always order ten hot-water bottles, well corked, three to be placed on each side of the patient, two or three between the legs, and one or two at the feet. After the patient is placed in bed and covered with the blanket these bottles are placed upon the upper blanket, and thus any danger of burning the skin is avoided.

(11) Of the five china basins I use one for washing the hands and forearms before beginning the operation, a second for alcohol to cleanse the hands with, a third for a hot bichloride solution for disinfecting the hands after the alcohol, a fourth (after disinfection) for sponges or their substitute (see below), and the fifth for a hot bichloride solution in which to wash my hands repeatedly during the operation. The tin basin is used in case the patient vomits, and is chosen on account of its light weight.

(12) The three sheets are folded about six feet long and eighteen

inches wide. About a foot of the upper end is turned under, the short end being next the chest, and hanging over a bandage which is tied around the neck. Another bandage around the waist secures the sheet to the body. I use these for myself and two assistants as substitutes for the ordinary aprons or operating-coats. My reasons for this are, first, because they are sterilized, and secondly, it gives me much less trouble to have the nurse look after this than it does to keep several of these coats or aprons and have them constantly washed and sterilized at home.

FIG. 1.

The author's mode of using a sterilized sheet instead of an apron, the upper end being turned next the chest and over the bandage around the neck. The towel and bandages are also sterilized.

The towels, like the sheets, are to be sublimated so as to render them aseptic, and then are dried. I am persuaded that we often add needlessly to the shock of an operation by chilling our patients with the towels wrung out of a hot sublimate solution. These quickly cool, and in at least one, if not two instances, I could trace severe attacks of rheumatism to the use of the wet towels. It will be noticed therefore that the sublimated towels which I use are all dry. The entire field of operation is surrounded by them, and the arm or leg (and sometimes both) next the field of operation is wrapped with these sublimated towels, well secured by safety-pins. If the patient, then, in the ether-struggles happens to touch the part, it is by a disinfected towel rather than an infected arm or hand. Similarly in operations on the head or neck I pin one of these towels around the hair, and I also usually pin one around the inhaler.

(16) I have two pitchers of boiling water drawn on the morning of the operation and allowed to cool, so that I can dilute the hot water extemporaneously to any temperature desired with this cool, sterilized water.

(18) The wrapping-paper is for the purpose of making a hood for the Allis inhaler.

(19) The white flannel is for a binder, and in a breast case I always tear it lengthwise into two strips, each ten or twelve inches wide. One of these secures the dressing to the chest, and the other secures the

arm of the operated side securely to the chest to obtain that essential, physical rest. I pin the two layers of flannel to each other behind the elbow in order to give support to the arm. A sling supports the forearm.

Part III.

(1 and 2) The sublimated gauze that I have found the most satisfactory is that made by Am Ende, of Hoboken, N. J. Any other make or Lister's double cyanide gauze may of course be ordered. I have lately used also with great satisfaction Hartmann's wood-wool dressing. I have had Dr. Coplin, the bacteriological assistant in the Jefferson Medical College Laboratory, examine this bacteriologically, and he has found it absolutely sterile. I rarely use sponges now, but more commonly cut up a half or a whole can of sublimate gauze into masses one-half to two-thirds the size of a fist and use them for sponges, throwing them away of course afterward. They may be used after Landerer's dry method, and even in cases where one does not wish to adopt this as a method I think the gauze mops are much less dangerous than sponges, no matter how carefully they are disinfected.

In the abdomen however I always use sponges, because in cutting the gauze there are apt to be loose threads on the margin which I should be unwilling to leave in the abdomen. The wood-wool dressing I have not found so advantageous for sponging. It may be used, it is true, in little bags of cheese-cloth, but they are more troublesome to make than the simple cutting of the sublimated gauze.

I always use my dressings dry.

(3) The rubber dam is the thin rubber tissue generally used by dentists and known to dealers by this name. Even with sublimate gauze I always use it, not, as in carbolic acid dressings, on account of the volatility of the antiseptic, but to prevent the soaking through of the discharge at the points opposite the drainage-tubes. The size of the rubber dam is suited to each case.

(6) Outside of the rubber I ordinarily use a mass of "Globe antiseptic wool." I find it the best means of securing an equable and elastic pressure.

Part IV.

(1) The solution of carbolic acid is a little more than 1 : 10, and is made of this strength in order that it may be extemporaneously diluted with hot water for the instruments. These I place in one or more tin trays and cover them as soon as I arrive with the carbolic acid solution diluted to 1 : 20. Just before beginning the operation, after they have been soaking ten to twenty minutes, I pour off all this solution and cover them with boiling water. By this means they are thoroughly disinfected, and at the same time the substitution of the boiling-water

prevents the destruction of the epidermis of my hands, which is one of the great objections to carbolic acid. The extra carbolic acid is to make more of the solution if desired, and as I always order the carbolic solution in a half-gallon bottle it can be made extemporaneously with sufficient accuracy. Scrubbing the hands with ordinary vinegar is the best means of removing blood, and neutralizes excellently any disagreeable effects of the carbolic acid. I owe this suggestion to Miss Dalziel, of the Orthopædic Hospital. In the Jefferson Hospital and elsewhere where I have a Schimmelbusch sterilizer I always use this instead of soaking the instruments in the carbolic solution, but in operations in private houses I find the carbolic acid more convenient and equally efficient. In the Jefferson Hospital we have also a Sattegast steam sterilizer for sheets, towels, gauze, etc., to be used instead of sublimating them. The Arnold sterilizer answers admirably also for this purpose and is much cheaper than the foreign makes. The largest size should be ordered. It is made of copper and costs $10. A croup attachment comes with it.

(5 and 6) While I frequently order morphine and opium suppositories lest they be needed the night following the operation, as a matter of fact I very rarely have to use them. Antisepsis has almost abolished pain after operations, even the major ones.

(8) The alcohol is for the purpose of washing the hands and scrubbing the finger-nails after they have been cleansed with soap and water, and before cleansing them with the bichloride solution.

(9) I often give one or two ten-grain sulfonal powders the night before the operation, to overcome the natural apprehension a patient often feels and so secure a good night's sleep, and afterward, also, if necessary.

(14) The sublimate tablets are familiar now to the profession, and are by far the most convenient form of making extemporaneously the ordinary solution of 1 : 1000, or any other desired strength.

If the nurse understands her business as she ought, and follows the directions given, all the preparation will be made—the room and table all ready, the wrappers taken off the bottles, the corks sufficiently loosened, the lids of the cans of gauze loosened, and everything will be so arranged that the surgeon has only to prepare his instruments, needles, sutures, and gauze-sponges, and is ready to proceed without any loss of time to himself, his assistants, or his guests.

Instruments.

In order that I may not forget any instrument or appliance, even the most trifling, I have made out for my own use the appended manuscript list of instruments, etc. Before an operation I run over each item, first in the "general list" of instruments, etc.; secondly, the list of instruments for the especial kind of operation to be done, and lastly, the "special list" of instruments. This requires only a few minutes, and

by it I am reminded always to see if any instrument or appliance has been omitted, and if the stock of such as are used up (silk, catgut, drainage-tubes, etc.) is exhausted, I am reminded to replenish it.

General List of Instruments, etc.

1. General operating-case.
2. Allis's inhaler.
3. Tongue-forceps.
4. Cocaine solution, 4 or 10 per cent.
5. Hemostatic forceps.
6. Retractors.
7. Sponges—ordinary size; elephant ear; small.
8. Sponge-holders.
9. Silk; catgut; iron and silver wire.
10. Drainage-tubes—rubber; glass.
11. Horsehair for drainage.
12. Sharp spoons.
13. Volsella.
14. Paquelin cautery.
15. Fountain syringe.
16. Large tin pans; small rubber pans.
17. Trocars
18. Long probes.
19. Long hemostatic (pedicle) forceps.
20. Photographic apparatus and shutter.
21. Electric battery and lights.
22. Forehead-mirror.
23. Rubber pad.
24. Aspirator.
25. Esmarch's bandage: tourniquet.
26. Iodoform-dredger.
27. Splints.

Instruments for Operation on the Brain and Spine.

1. Brain case of instruments.
2. Rongeur forceps.
3. Horsley's or other Rolandic fissure meter.
4. Broca's calipers.
5. Thermometer.
6. Müller's fluid.
7. Bottle for cerebro-spinal fluid.
8. Bottles for specimens.
9. Opium and ergot to be given beforehand.
10. Faradaic battery.
11. Keen's double brain-electrode.
12. Battery and electric light.
13. Iodoform-gauze.
14. Canula and hollow needle.
15. Decalcified bone.
16. Aniline pencil.
17. Rat-tooth forceps for dura.
18. Horsley's putty for hemorrhage from bone.
19. 1:2000 gauze.
20. Plain sterilized gauze.
21. Skull and Cast of brain.

Operations on the Mouth and Throat.

1. Special case of instruments.
2. Intubation-case.
3. Oral specula, gags, and retractors.
4. Stick sponges.
5. Special needles.
6. Volsella for tonsils.
7. Tonsillotome.
8. Long forceps.
9. Snare.
10. Tracheotomy tubes and tapes.
11. Feathers.
12. Long curved forceps.
13. Harelip pins.
14. Tracheal tube (Trendelenberg's or Hahn's).
15. Trachea dilator

Instruments for Abdominal Operations.

1. Count instruments and sponges before operating and again before closing abdomen.
2. Trocars.
3. Ovarian trocar and tubing.
4. Pedicle silk.
5. Senn's bone plates and Abbe's catgut rings.
6. Tube for washing stomach.
7. Long hemostatic (pedicle) forceps.
8. Abdominal retractors.
9. Koeberlé's serre-nœud and pins.
10. Enterorrhaphy needles and silk.
11. Elastic tubing.
12. Intestinal clamps.

Instruments for Operation on the Male Genito-urinary Organs.

1. Catheters.
2. Bougies and filiform bougies.
3. Sound.
4. Urethratomes and dilators.
5. Urethrameters.
6. Metal or rubber syringe, to inject air or fluid into bladder.
7. Lithotrites.
8. Litholaplaxy set.
9. Stone forceps and scoops.
10. Staffs (urethral and perineal).
11. Crooked scissors.
12. Watson's perineal drainage-tube and rubber tubing.
13. Long hemostatic (pedicle) forceps.
14. Snare.
15. Petticoated tube.
16. Modeller's clay.
17. Saucer.
18. Cocaine.
19. Keen's special retractor for suprapubic cystotomy.
20. Forceps and écraseur for tumors.
21. Petersen's bags.
22. Solution for bladder.
23. Cystoscope and battery.
24. Abdominal electric light.
25. Dalley's steel nail.
26. Catheter for ureter.
27. Arrange for Trendelenberg's position.
28. Ureteral catheters.
29. Perineum distender.

Instruments for Operation on the Female Genito-urinary Organs.

1. Special case of instruments.
2. Specula.
3. Stick sponges.
4. Special needles.
5. Perineum distender.
6. Long hemostatic (pedicle) forceps.
7. Hawk-bill or toothed scissors.
8. Snare.
9. Uterine sound,
10. Uterine clamp.
11. Uterine dilators.
12. Uterine curettes and forceps.
13. Strong rubber cord.
14. Trocars.
15. Long probe.
16. Crooked scissors.
17. Urethral dilators.
18. Petersen's bags.
19. Pedicle silk.
20. Abbe's catgut rings for lateral anastomosis.
21. Silk and needles for enterorrhaphy.
22. Koeberlé's serre-nœud and pins.

Operations on the Rectum.

1. Stick sponges.
2. Rectal specula.
3. Perineum distender.
4. Rectal bougies.
5. Forceps for piles.
6. Snare or écraseur.
7. Todd's rectal dilator.

Operations on Bones.

1. Case of bone instruments.
2. Esmarch's bandage.
3. Sharp spoons.
4. One-half inch trephine.
5. Surgical engine and drills.
6. Hand-drills and stout wire.
7. Special splints.
8. Suspension apparatus.
9. Plaster-of-Paris and plaster bandages.
10. Flannel.
11. Decalcified bone.
12. Sand-bag.
13. Adams's saw.
14. Macewen's osteotomes, chisel, and mallet.
15. Mastoid perforator.

Special Instruments.

1. Special case of instruments for each operation.
2. Iodoform in ether and syringe.
3. Rubber adhesive plaster.
4. Davies' lever or long skewer.
5. Bullet-forceps.
6. Nélaton's probe.
7. Tenotomes.
8. Plaster-of-Paris bandages and plaster.
9. Morris's kidney-retractors.
10. Sand pillow for nephrorrhaphy or osteotomy.
11. Lithotomy forceps for nephrolithotomy and cholecystotomy.
12. Œsophageal bougies.
13. Bellocq's canula.
14. Mastoid perforator.
15. Special splints.
16. Instruments for gall-bladder and gall-stones.

I add a few words of explanation as before.

In my operating-satchel I always carry a small general operating-case with the instruments ordinarily required. I need not enumerate them, for each surgeon will follow his own desires and the necessities of his kind of work. I may mention, however, a few which I have found especially useful.

I almost always use the Hagedorn needles, an assortment of which I carry in a small bottle in carbolized glycerin. For these I have found by far the best needle-holder to be that of Abbe, of New York, with McBurney's spring catch on one blade of the handle. I have found the little "Tweed dropper" the most useful in etherization. It fits into any one of Squibb's ether cans, and thus avoids the necessity of carrying any ether bottle.

I have always found it an economy of space to have two of my scalpel handles tipped with Volkmann's sharp spoons. Another instrument I have, which is not generally known to the profession, is Dr. Allis's "dry

FIG. 2.

Allis's dry dissector. Half-size. The two blades are just thick enough to be strong.

dissector," for tearing tissues and separating muscles, loosening adhesions, scraping away the periosteum, etc. I find this one of the most useful instruments in my case. Instead of this I very often use two dissecting-forceps—one in each hand—one to seize and the other to tear the tissue, and have found them more useful by far than seizing the tissue with a pair of forceps and tearing with the grooved director or finger, though each of these means serves a good purpose at times.

I carry a few sponges in a glass-stoppered bottle in a carbolic solution, though I rarely use them now. In another bottle, in the same solution, I have some rubber drainage-tubes, silk, etc.; and in another smaller bottle, again in a carbolic solution, some disinfected horsehair for drain-

age. The horsehair is first washed well with soap and water, then with ether to dissolve the fatty matters, and then is disinfected in 1 : 1000 sublimate solution before being placed in the bottle. In addition to a nest of three large tin pans I carry a small rubber pan, such as photographers use, and place my needles, needle-holders, ligature-reel, and sutures in that.

Instruments for Operation on the Brain and Spine.

(11) My double brain electrode is figured in *Wood's Reference Handbook*, vol. viii. page 212, but the disinfected metal ends of the ordinary battery cords answer very well.

(18) Horsley's putty for hemorrhage from the diploë is made as follows: Melt repeatedly one part of yellow wax and four of vaseline. Next add carbolic acid, one part to twenty of the wax and vaseline, and mix intimately. Then add sufficient white wax to make a mass that will be hard when cold, but that can be quickly softened by the fingers. With this (kept disinfected, of course) he "putties up" the vessels in the edge of the bone.

(19, 20) The 1 : 2000 gauze I always use to the head before head operations instead of the 1 : 1000, because I have found that the 1 : 1000 pustulates the scalp, which the weaker gauze does not do. Plain sterilized gauze I always provide for use as sponges as soon as the brain is exposed, as the antiseptic lessens or destroys he irrit ability of the brain to the Faradaic current.

(21) I always have a skull and a cast of the brain for reference during an operation.

Instruments for Operations on the Male Genito-urinary Organs.

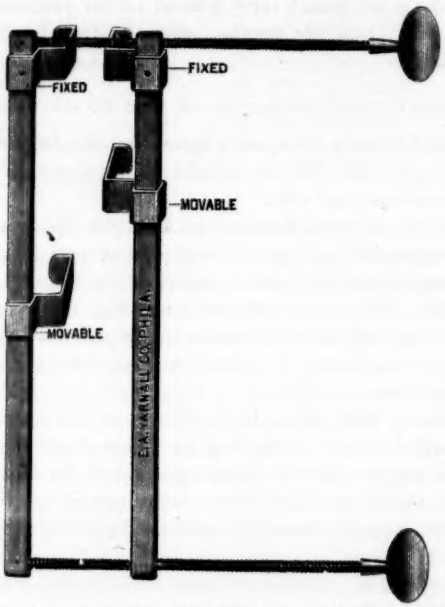
(19) My special retractor (see illustration on page 22) I have recently devised and used with great satisfaction in one case. The very day I had it made I saw in the *Lancet* of October 18, 1890, p. 809, an instrument of Dr. Watson, of Boston, for the same purpose. My own has, I think, the advantage that its force is better regulated than by a spring, and as two of the jaws are movable it may be used in the abdomen or elsewhere, and with varying sized openings.

Some instruments, etc., will be found duplicated in the lists, because I especially desire not to forget them.

Mr. Mayo Robson, of Leeds, has recently published a little volume of 52 pages, entitled *Instruments and Appliances Required in Operations* (London: Churchill, 1889). In this there is a list of instruments, dressings, appliances, etc., required in each operation. It will be found much more complete, of course, than my own. But I have found practically that a list covering the instruments required in each class of

operations, together with the general list and the list of special instruments to be quite sufficient for my purpose.

Fig. 3.



The author's retractor for supra-pubic cystotomy, abdominal sections, etc., when needed.

My own method also has one essential advantage. In using Robson's book the surgeon has to write out all his directions each time for the nurse, for drugs, etc. By my blanks the surgeon tears one off from the pad and has only to check what he wants done in parts I and II., and hand it to the nurse, and check what he wants in parts III. and IV. and send it to the drug-store after adding his signature, the name and address of the patient, and the date. It is a great economy in time and trouble. He then looks over the lists of instruments, etc., and selects what he wants.

THE MODERN TREATMENT OF SCIATICA.

By William Broaddus Pritchard, M.D.,
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It has appeared to the writer not a little strange that the affection which forms the subject of this paper should have been so long a

term of reproach to the profession. The subject has great relative importance. The domain of sciatica is a broad one, for, although it is to a certain degree modified by climatic influences and hygenic environment, it is common to all countries. No distinctions of class are recognized, the prince and the pauper suffering alike, and the suffering in many instances is without a parallel in medicine. In not a few examples, the disease has produced a condition of physical disability which has rendered the patient absolutely helpless and a burden to society. Here are factors, one would think, sufficiently numerous and important to have led to such earnest and conscientious study of the subject as would have given scientifically accurate results in diagnosis and treatment long ago. It is only, however, within recent years that we have learned to differentiate sciatica from rheumatism and gout, and our knowledge of the pathology and consequent rational therapeutics of the disease is of much more recent date. The etiology of the affection has been, for many years, fairly well understood, a statement which is also true of the clinical history, though much new light has been thrown upon the latter phase of the subject by recent investigations of peripheral nerve diseases. This knowledge is the outcome of a study of the pathology involved, the only field in which investigations lead to accurately scientific results.

The birth of the literature of peripheral nervous diseases may be said to date from the beginning of the present decade, and to Leyden probably belongs, more than to any one else, the credit of first establishing the subject upon a scientific basis. Multiple neuritis as a distinct entity in medicine, owes its recognition by the profession to a description given by Leyden in a paper published in 1880. This was followed by a series of investigations, carried out by Pitres and Vaillard,[1] the results of which, as published from time to time, embody about all of practical importance which we know of the diseases of the peripheral nervous system. Much additional and valuable information has been gathered, also, through the investigations of Erb,[2] Remak, Babinski, Adamkiewicz, and others, and though the subject has not yet been entirely elucidated, we know much that was not even suspected ten years ago, and our knowledge is increasing daily. Although not directly the object of most of these investigations, sciatica has been found incidentally to exemplify many of the pathological conditions which have been observed. As a result we have (besides the overthrow of the delusion of identity of rheumatism and gout with the disease in question) two distinct conditions of disease, often clearly demonstrable clinically, instead of the one indefinite and poorly understood symptom-

[1] Pitres and Vaillard: Gaz. Médécine de Paris, 1887; Revue de Méd., 1887.
[2] Erb: Neurolog.-Centralblatt, 1883.

group. In other words, we have to-day to deal with sciatic neuritis on the one hand, and sciatic neuralgia on the other. The importance of the distinction may be appreciated when it is stated that both prognosis and treatment depend upon its recognition. Incidentally, and as corollary to the above, it may be added that the reputation of the physician in attendance is also involved.

The establishment of the fact that true neuritis is the pathological condition in certain cases of sciatica, has led, as might have been expected, to the belief on the part of many, that it is the *only* condition ever present. With such it is believed that the essential factor is always of an inflammatory character, and that the difference in clinical symptoms depends only upon the degree of inflammatory action. While there is much to support this view, I am one of those who believe that there are cases which must be still classed as neuralgic, rather than neuritic. There are certainly two very distinct clinical types to be met with, and it is difficult to reconcile them to a common pathology. In order to illustrate the difference, according to the type present, I append the following symptom-groupings, which will also serve for purposes of differential diagnosis.

Sciatic Neuritis.	*Sciatic Neuralgia.*
Causes: Wounds and tumors indicate neuritis rather than neuralgia.	Etiology same, except that constitutional states—as anæmia, malaria (?)—indicate neuralgia, unless bilateral.
Pain duller; occurring in paroxysms, and in intervals, paræsthesia of pricking, tingling and numbness.	Pain sharp and more constant. Paræsthesia rare, especially numbness.
Movements of limb, especially forcible extension, give pain.	Pain not specially aggravated by movements, if at all affected.
Anæsthesia rapid in onset at times and in limited areas.	Actual anæsthesia very rare. General numbness may occur.
May be swelling along course of nerve and tenderness on pressure.	No swelling. Pain, not tenderness, on pressure at certain points.
Trophic changes in skin, hair and nails. Trophic wasting of muscles.	No trophic changes. Slight wasting may occur from disuse.
Paresis or paralysis of muscles, with reaction of degeneration to galvanic current, may be present.	No paresis or paralysis. No reaction of degeneration.
Faulty position of body (Babinski, Nicoladoni) sometimes observed.	Faulty position quite exceptionally met with.

As with every other disease, classical types in sciatica are the exception, but sufficient data may be secured in nearly all cases to enable you to reach an approximately correct diagnosis as to the special form you may have to deal with. A loss of tactile perception is always strongly suggestive of neuritis, while paresis or paralysis, with the reaction of degeneration to the galvanic current in the affected nerve, is positive evidence of a nerve degeneration. The pathological conditions found

are sufficient to account readily for the symptoms, and the variations in intensity of the same. The neuritis, if the case is such, may be either parenchymatous or interstitial.[1] The perineurium may be alone affected, or the nerve-fibres may be pathologically altered from inflammation or pressure. The usual process is that of ordinary inflammation following some such excitant as trauma or cold, giving rise to vascular engorgement, with the outpouring of leucocytes and a succeeding proliferation of interstitial tissue. These morbid products fill up the nerve-sheath and by pressure destroy the sheath of Schwann, set up a degenerative process in the axis-cylinders, finally producing a sclerotic condition of the nerve-fibres or completely destroying them. The intensity and extent of the symptoms will, of course, depend upon the extent and activity of the inflammatory action. Such is the pathology of sciatic neuritis. In a certain number of cases, however, no such conditions are found, and, indeed, section and examination of the nerve reveals nothing, either macroscopically or microscopically, which will account for the symptoms. We are compelled, while acknowledging that future investigations may show that such cases belong to the type described above, to class them differently for the present, and I know no better term for the condition than neuralgia. While an acceptance of the term involves a begging of the question from a pathological standpoint, we are not yet in a position to dispense with it. Except that it is supposed to involve a state of nerve irritability, dependent upon trophic influences or altered nutrition, etc., neuralgia may be said to be without a pathology.

I shall not consider the clinical history or differential diagnosis of the disease any further, assuming the existence of a general familiarity with both divisions of the subject. With regard to the identification for many years of sciatica with rheumatism and rheumatic states, I find it difficult to understand how such an association came to be so generally accepted.[2] The clinical symptoms differ widely, and in an experience with more than sixty cases, treated during the past three years at the Department of Nervous Diseases of Prof. Landon Carter Gray in the New York Polyclinic, I have found the so-called "anti-rheumatic" remedies exceptionally curative in sciatica.

The modern treatment of sciatica, based upon an enlightened pathology, represents a revolution in therapeutics, and varies radically with the type present. While many of the drugs and measures in use in former years are still indicated in the neuralgic type, the pharmacopœia

[1] Starr: Middleton-Goldsmith Lectures. Med. News, 1887. Erb: Ibid. G. Hammond: Journal Nervous and Mental Diseases, May, 1890.

[2] Pitres and Vaillard found nerve degeneration following rheumatic deposits as a cause, but the cure of the rheumatism in such cases does not cure the neuritis: Revue de Méd., 1887. See also Duplaix: Gazette des Hop., 1887.

of sciatic neuritis is an entirely new one. A summary of the most reliable of the modern anti-neuralgic and analgesic remedies will include phenacetine, antipyrine, antifebrin or exalgine, cocaine and osmic acid, the last two used hypodermically alone. Of these, phenacetine is by far the most reliable and satisfactory. Doses of seven and a half grains, given at four- or six-hour intervals, I have found quite effective, though larger quantities may be given with perfect safety, if necessary. Exalgine I have found, after repeated tests, very unreliable. With osmic acid, recommended in America by S. Solis-Cohen, in ten-minim doses of a one per cent. solution hypodermically, I have had little experience. It is, of course, advisable to antagonize by proper medication any cachexia which may be present, and tonics, including change of air, will be found of value in all neuralgic states. A combination of iron, quinine, and arsenic, is a common formula, and answers quite well.

It is in the treatment of neuritis of the sciatic nerve that we have to note the most radical innovations in therapeutics, and the greatest advancement in results. It is of primary and essential importance in these cases to look for and, if possible, remove the cause. This may be either mechanical and local, or constitutional. Among the local causes may be mentioned, in addition to wounds, strains and hip-joint disease, tumors of the pelvis, fæcal accumulations, uterine displacements, varicose veins and aneurisms. Exposure to cold may also be cited as a local excitant, though it probably acts in a double capacity. Toxic conditions of the blood give rise to a local neuritis occasionally. Lead and arsenic among the metals, diabetic states, alcoholism, syphilis, and certain microörganisms, as in malaria, have been cited as causes. Bury, in an article published in 1888 in the *Manchester Medical Chronicle*, called attention to the frequent development of neuritis in association with tubercular phthisis and typhoid fever. Thrombic occlusion of a local bloodvessel may be the explanation in some of these cases.[1] Removal of the cause, where the relationship is clear, is at times all that is necessary in the line of treatment. If this is not determinable, the treatment resolves itself into three cardinal principles—the relief of pain, the antagonizing of inflammation, and absolute rest of the part. Of these three, the last is most important. The patient should not only be put to bed and kept there, but he should be mechanically restrained from exercising the functions of the diseased nerve. This can be best accomplished by applying a splint,[2] preferably a long hip-splint, extend-

[1] Pitres and Vaillard conducted a series of experiments with hypodermic injections of ether and other agents along the course of the sciatic and other nerves, producing thereby a rapidly developing form of neuritis. The possibility of such a result should always be considered in using any irritant drug in the neighborhood of nerve trunks by hypodermic injection: Gazette Méd. de Paris, 1887.

[2] S. Weir Mitchell, M.D.

ing from the axilla to the foot, so adjusted to the side of the body and leg as not to interfere with local treatment along the course of the nerve. The splint should be worn until the symptoms have disappeared or until the disease has passed into a chronic state, which is rare to-day in comparison with its former frequency. Inflammation is best antagonized by cold applications in the form of rubber bags filled with ice. In the few cases in which cold acts badly, hot applications may be substituted. They should never be alternated, however. This treatment, with morphine to relieve pain, is all that is necessary in the first stages. After the acute stage has passed, the cold applications may be dispensed with. Your active inflammation has subsided, and you have to deal with the mechanical effects produced by the morbid products of inflammation within the nerve-sheath. To hasten the absorption of this irritating material massage will be found most valuable. The manipulations should be gentle at first, once or twice daily, and continued from fifteen to thirty minutes. It is here that electricity finds its place by reason of its catalytic and alterative action. Galvanism is the form indicated, and the entire nerve should be included in the action of the current, which should be continuous, never interrupted. The *séances* should be short at first, and the quantity used should not exceed five milliampères or less. Should the case manifest any tendency to develop a chronic state, the current should be increased, or it may be interrupted slowly, for its stimulating effect. The interrupted current should, however, be used in these cases with extreme caution.

I have found little benefit from so-called specifics in this form of sciatica. Turpentine, nitrate of silver, sulphur, cocaine, etc., have been monotonously disappointing. Iodide of potash, while theoretically indicated, has proven of little value in my experience except in one case in which there was a distinct specific history and cachexia. In this particular case, the recovery of the patient I attributed as much to the inunctions of mercury used as to the iodide.

Counter-irritants, while markedly beneficial in a small proportion of cases, are not at all certain. Nerve-stretching I believe to be absolutely valueless and a dangerous procedure, while in two instances in which section of the nerve has been done, in one the relief was only partial, the other not being benefited at all, while in both cases a semi-paretic condition remained more or less permanently.

New York, 355 W. Fifty-eighth Street.

NOTES ON SIX CASES OF PERINEAL SECTION; WITH SOME REMARKS ON THE TECHNIQUE OF THE OPERATION.[1]

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There has always been more or less confusion in the nomenclature of the perineal operations for the relief of stricture. The old *boutonnière* operation (of which the so-called "Cock's operation" is a modification) had for its object the opening of the urethra behind the obstruction, was purely palliative, and if it ever effected a cure did so by accident, as the procedure itself did not include of necessity any division or enlargement of the strictured portion of the canal. It is an "external urethrotomy," to be sure, but it is not related either in its purpose or its method to the other operations known by that name.

Since Syme revived and popularized the formal operation of external urethrotomy—the division of a stricture upon a grooved staff passed through it into the bladder—more system has been introduced into the terms employed, but there is still much objectionable looseness. Hunter, Grainger, C. Bell, and others had, before Syme's time, formulated the operation known as "perineal section," which was also an external urethrotomy, but which was then restricted to those cases in which no instrument whatever could be made to pass the stricture. The term should still be reserved for such cases, and on account of its brevity is, perhaps, preferable to its synonym, "external perineal urethrotomy without a guide."

The cases which follow belong exclusively in this category—*i. e.*, are all cases of perineal section, and do not include any cases of external perineal urethrotomy. They were all performed during acute retention of urine, which resulted in two from recent complete rupture of the urethra; in two from traumatic stricture following old and presumably incomplete rupture; in one from very old neglected strictures and recent false passage; in one from stricture and false passages, both of many years' duration. Such cases are so frequent in the practice of every hospital surgeon that I shall summarize them as briefly as possible, my object in reporting them being chiefly to call attention to certain details of the operation, and to invite discussion upon them.

Case I.—E. C., æt. forty-four. Cause and duration of obstruction: five attacks of gonorrhœa twenty years ago. Urinary symptoms for fifteen years.

Condition when first seen: Urinating in drops every fifteen or twenty minutes, with tenesmus. Bladder distended; free bleeding from recent

[1] Read before the American Association of Genito-urinary Surgeons, 1890.

attempt at catheterization. False passage, beginning just anterior to the triangular ligament and running between prostate and rectum. No instrument could be passed.

Date of operation: October 30, 1889.

Details of operation: False passage filled with filiform bougies. Syme's staff passed down to membranous urethra. Perineum opened on point of staff. Urethral walls held asunder by silk threads. Clots turned out from false passage. Firm fibrous stricture, easily recognized. No probe would pass through it. Urethra posterior to it, dilated to the size of the thumb, was opened and flat grooved director was passed into the bladder. The stricture was freely divided; a large sized Nélaton catheter was passed through whole length of urethra into bladder and left *in situ*. An attempt at suturing the urethra failed, on account of lack of material at seat of stricture. Wound packed with iodoform gauze. No serious difficulty met with.

Time of operation: Thirty-five minutes.

Subsequent course of case: Uninterrupted recovery. Catheter removed in six days. Regular catheterization every four hours begun on the fifteenth day. Wound healed entirely on the thirty-seventh day.

Calibre of urethra at date of discharge: Patient passes No. 31 French sound easily.

CASE II.—W. K., æt. fifty-five. Cause and duration of obstruction: Gonorrhœa in 1862 and 1863. Urgent urinary symptoms for six months.

Condition when first seen: Absolute retention. Bladder up to umbilicus; perineum and scrotum distended with urine, brawny and discolored. Moderate degree of shock. No instrument could be passed.

Date of operation: November 17, 1889.

Details of operation: Syme's staff introduced and cut down upon. Perineum filled with old plastic lymph, partially organized and of almost cartilaginous density. Urethra almost obliterated for three-quarters of an inch posterior to the bulb. Field of operation obscured by extremely free oozing from dilated vessels, which, imbedded in the lymph, seemed to be kept patulous. Urethra finally found near apex of prostate; flat director passed into bladder.

Tissues in course of urethra which could not be recognized as a distinct canal between the bulb and the prostate were freely divided; Nélaton catheter No. 26 French was passed and tied in.

No attempt at suture was made. Wound packed with iodoform-gauze.

Time of operation: Seventy minutes.

Subsequent course of case: Tedious convalescence, on account of condition of perineal tissues. Catheter removed in fourteen days. Catheterization begun in twenty-four days. Wound closed on forty-eighth day

Calibre of urethra at date of discharge: Patient passes 32 French easily.

CASE III.—J. B., æt. thirteen. Cause and duration of obstruction: Rupture of urethra from fall astride the sharp edge of an upturned empty barrel nine years previous.

Condition when first seen: Very frequent urination. Only partial evacuation of bladder. Some straining. Urine loaded with pus; a

few granular and hyaline casts. Patient pallid and emaciated. No instrument could be passed.

Details of operation: Urethra opened on Syme's staff. A long and tedious dissection failed to disclose opening of stricture. Canal opened at base of prostate. Intervening tissues divided. Nélaton No. 15 French left in bladder. Wound packed. No suture.

Time of operation: ninety minutes.

Subsequent course of case: On the seventh day had orchitis of right side; at end of second week had rigor, followed by fever. Subsequently had frequent attacks of pyrexia, with exceedingly high alternating with subnormal temperatures. Urine loaded with pus. Pain over left kidney. No relief from any form of treatment. Diagnosis: Pyelitis. Exploratory nephrotomy recommended, but refused by parents. Patient passed from notice with small perineal fistula still discharging.

Calibre of urethra at date of discharge: No. 15 French passed easily.

Case IV.—L. N., æt. forty. Cause and duration of obstruction: Fell astride of an iron girder twenty-four hours previous.

Condition when first seen: Absolute retention; great distention of bladder; free bleeding from meatus; perineum and scrotum swollen and infiltrated. No instrument could be passed.

Details of operation: Median section of perineum. Large quantities of blood and urine escaped. Scrotum incised with same result. Catheter passed through meatus protrudes into wound, and a complete rupture of the urethra is found extending through the so-called bulbous portion —the posterior part of the spongy portion.

A long search for the posterior portion failed to find it, until by pressure upon the pubes a jet of urine was made to appear in the wound, and led to the discovery of the proximal end twisted upon itself, retracted, and resembling the end of a large artery which had undergone torsion. A director was first passed through it into the bladder. Then an English gum catheter was passed for the whole length of the urethra. It was found, by moderate traction, that the two ends could be brought into contact. They were then united by six interrupted sutures of very fine chromicized gut, which resists absorption for two or three weeks. The sutures were passed through the entire thickness of the urethra. A large rubber drainage-tube was then laid in the wound, the inner end of the tube opposite the point of junction. The angles of the perineal wound were then united by deep silver sutures, and the centre gently packed around the drainage-tube.

Time of operation: One hundred and twenty minutes.

Subsequent course of case: No fever; no pain. Urine possibly appeared through perineal wound for three days, but in such small quantity that it was uncertain. None later than that. Catheter removed on ninth day, but passed gently every four hours. Drainage-tube removed on twelfth day. Perineal wound healed solid on twentieth day. Patient urinated in a full stream at this time. Went home on twenty-fifth day.

Calibre of urethra at date of discharge: Passing No. 30 steel sound easily and painlessly for himself.

Case V.—J. W., aged seventeen. Cause and duration of obstruction: Climbing from the roof of an out-house fell astride a fence thirty-six hours previously.

Condition when first seen: Retention. Urethrorrhagia. Bladder abnormal. Perineum distended. No instrument could be passed.

Details of operation: Median incision. Complete rupture of membranous urethra; posterior portion of urethra promptly found by bimanual pressure, one hand on the hypogastrium with fingers of the other in the rectum. A portion of bruised proximal end cut off with scissors to obtain good material for sutures; five chromicized gut sutures passed so as to unite urethra over an English gum catheter No. 20. Drainage-tube laid in wound, which was united at angles and packed in centre with iodoform-gauze.

Time of operation: Forty minutes.

Subsequent course of case: No fever. No pain. No appearance of urine in wound. Catheter removed on the fifth day on account of vesical irritation. The next day a few drops of urine came through the perineal wound. Catheter was used every four hours. No further leakage occurred. Drainage-tube was removed on ninth day. Wound healed solidly in two weeks, patient urinating freely and painlessly on the seventeenth day. Went home in three weeks.

Calibre of urethra at date of discharge: Passing No. 22 steel sound easily.

Case VI.—P. M., aged thirty-three. Cause and duration of obstruction: August, 1889, fell into a trench fourteen feet deep, alighting astride a plank. Had symptoms of incomplete rupture of the urethra. Retention relieved by catheterization. In October retention again and formation of extensive false passage during attempted catheterization.

Condition when first seen: Retention. Passing large quantities of blood from the meatus in the form of clots. Bladder much distended. Shocked. No instrument could be passed.

Details of operation: Median incision on Syme's staff passed down to obstruction. Enormous quantity of clot turned out of perineum. Bimanual pressure caused the protrusion of a clot from a portion of the urethra back of the seat of the original injury, which was near the prostato-membranous juncture. The stricture was divided on the floor of the urethra, a large catheter passed and then the tissues brought together by a continuous catgut suture uniting the edges of the incision, which was parallel to the long axis of the urethra. Drainage-tube and packing as in the other cases.

Time of operation: Sixty-five minutes.

Subsequent course of case: No fever. No pain. Urine came through wound for five days. Catheter withdrawn in ten days. Bladder emptied by Nélaton catheter every four hours for four days. Drainage-tube withdrawn on the fifteenth day. Wound healed solidly on the seventeenth day, patient urinating naturally in three weeks. Went home on the twenty-seventh day.

Calibre of urethra at date of discharge: Uses No. 31 steel sound easily.

In cases of extravasation of urine following rupture it has been thought that some light could be thrown by the history of the accident upon the probable situation of the injury.

Franc, Velpeau, and Poncet have attributed the urethral laceration to the crushing of the membranous portion of the urethra between the

offending body and the lower border of the pubic arch. If the accident occurred with the patient in a leaning position, the body directed forward, they believe that the posterior part of the spongy urethra could be crushed against the pubis; and think that when the force that produces the injury acts in the lateral direction the urethra is more probably pressed against the upper portion of the descending pubic ramus. Ollier refers lacerations of the membranous urethra to the pressure of the canal against the sharp edges of the subpubic ligament, which in his experiments seemed to have divided the upper wall of the urethra. Terrillon believes that when the body which is fallen upon is narrow the urethra is crushed against the ramus of the pubes, and thinks the injury is likely to be found about the region of the bulb; and when the fall is upon a broader substance, the urethra is crushed against the anterior surface or inferior edge of the pubes and the lesion is found more anteriorly. Guyon says that in this accident, whether the cause is a fall or blow, the mechanism is the same; the urethra and the soft parts which immediately surround it are pressed and crushed against the resisting pubic symphysis, whilst the superficial tissues, more supple and more elastic, escape or are scarcely involved. He believes, as does Terrillon, that such ruptures are frequently only partial, and that they are commonly situated in the spongy part of the urethra, an inch or less in front of the anterior layer of the triangular ligament, and in this opinion he is supported by Iversen, who has recently analyzed twenty-nine cases of this accident. Duplay thinks that in a certain proportion of cases the urethra is ruptured by a temporary dislocation of the symphysis pubis, the soft bones springing back into their proper relation after the crushing force is removed, and leaving no trace of the accident except the urethral lesion.

He thinks that this "rupture by traction" may also occur in a case of fracture of the pelvis with a displacement of a portion of the pubic arch; and it is of course evident that the urethral wall could be wounded directly by a fragment of bone after such a fracture.

In my own experience the history of the case has been of but little value in determining the seat of laceration, which could be better estimated by the character and limitation of the extravasation.

The urethra may, for example, be divided into four regions. In all that part from the meatus to the scrotal curve extravasation is accompanied by a swelling and discoloration of the penis, greatest in the immediate neighborhood of the injury.

In the region included between the attachment of the scrotum and the anterior part of the bulb, the course of extravasated blood or urine is governed by the attachments of the deep layer of the superficial fascia, or fascia of Colles.

Extravasation of urine occurring through laceration in the bulbous

region of the urethra will first follow the space enclosed by this fascia in front and below, and by the anterior layer of the triangular ligament posteriorly, and, as it cannot reach the ischio-rectal space on account of the attachment of the fascia to the base of the ligament, and cannot reach the thighs on account of the insertion of the fascia into the ischio-pubic line, it is directed into the scrotal tissues, and thence up between the pubic spine and symphysis until it reaches the abdomen.

If the injury affect the membranous urethra alone, the surrounding structures not being involved in the laceration, the extravasated urine would be confined to the region included between the layers of the triangular ligament, and would only gain access to other parts after suppuration and sloughing had given it an outlet. The consecutive symptoms would then depend upon the portion of the aponeurotic wall which first gave way.

If the injury is situated behind the posterior layer of the triangular ligament, *i. e.*, in the prostatic urethra, the urine may either follow the course of the rectum, making its appearance in the anal perineum, or, as it is only separated from the pelvis by the thin pelvic fascia, it may make its way through the latter near the pubo-prostatic ligament, where it is especially weak, and may spread rapidly through the subperitoneal connective tissue.

According to Iversen, the external swelling is usually absent, and the above occurrences are to be suspected from the severity of the symptoms.

In the presence of retention of urine from recent rupture of the urethra in which catheterism is impossible, there can be no doubt as to the proper procedure. Immediate perineal section is so obviously the only operation which meets all the indications that no other can be seriously considered.

In mild cases of rupture, *i. e.*, in those where after such an injury there is an appearance of blood at the meatus, with difficult urination, or with retention, but with no evidence of extravasation, or no general alarming symptoms, and in which catheterization is easy, the surgeon may be content with regular evacuation of the bladder by means of a soft instrument, well greased with carbolized oil, and with prescribing absolute rest, the patient being carefully watched for the onset of fever or the appearance of local swelling. In cases of a more severe type, in which, in addition to urethrorrhagia and retention of urine, there are evidences of extravasation, and in which catheterism, though difficult, is possible, it is wisest to leave a full-sized catheter in the bladder, and at the same time freely to lay open the perineum and scrotal tissues, or any which have been involved in the extravasation.

In the cases of greater gravity, however, where no instrument can be passed into the bladder, perineal section is, as I have said, imperatively

indicated. The steps of the procedure are obvious and beyond dispute except as to a few points; which I may mention *seriatim:*

1. If persevering search fails to reveal the proximal end of the torn urethra, are suprapubic cystotomy and retrograde catheterization justifiable? I am inclined to answer this affirmatively, though such failure should be most exceptional. If the bladder contains urine, and particularly if it is distended, pressure at the hypogastrium or bimanual pressure with the fingers of one hand on the abdomen and of the other in the rectum as recommended by Dr. Bangs will often cause a jet of urine to issue from the proximal end, and will at once disclose its situation. Hæmostasis in the whole wound by very hot water will sometimes reveal the urethra by emphasizing the difference between its color and that of the surrounding parts, the urethra generally showing much paler. The relation to the pubis and to the lower edge of the triangular ligament should be most carefully borne in mind, the search for the torn end in ruptures and for the portion behind the stricture in these cases being frequently carried too near the pubes. The membranous urethra in the adult usually runs through the ligament about one inch below the symphysis and about three-quarters of an inch above the perineal centre. All guides, however, fail occasionally in certain of these cases, and it is then that supra-pubic cystotomy is warranted as an operation with so small a mortality that the slight additional risk is far outweighed by the advantage to the patient of having even an imperfect restoration of his urethral canal.

Retrograde catheterization was practised for the first time in 1757, by Verguin, a surgeon of Toulouse, who passed a catheter into the urethra through a pre-existent fistula of the bladder consecutive to supra-pubic puncture. Since which time a number of surgeons have had recourse to this procedure, and Sédillot formerly expressed the opinion, "that in the absence of a pre-existent fistula, if, in the course of an external urethrotomy, undertaken for an impassable stricture, it were found impossible to discover the posterior end, the surgeon would be justified in doing a supra-pubic cystotomy at once, in order to practise retrograde catheterization.[1]

2. Although some differences of opinion exist as to the value of a retained catheter after most perineal operations opening the urinary tract, there can be no question of its value in cases of rupture, and I believe that it is of great use in *all* forms of perineal operation opening any portion of the urinary tract. If Spence's caution is observed, and it is not allowed to project too far into the bladder, if it is kept clean and sweet by regular antiseptic injections, it is of the utmost advantage in aiding in the

[1] Duplay: "Injuries and Diseases of the Urethra," International Encyclopædia of Surgery.

prevention of urethral fever, as has been shown by Keyes, Harrison, Diday, Shield, Hill, and many others.

3. After the introduction of the catheter in cases of rupture, is there definite advantage to be derived from urethral sutures?

The surgeon has four plans open to him: *a*, To leave the wound open without any attempt at coaptation; *b*, to suture the urethra only; *c*, to suture only the perineum; *d*, to suture the urethra at one place and the perineum at another.

The experiences of Guyon, Championnière, Le Dentu, Molière (de Lyon), Erasme, Kaufmann, of Zurich, Tenier, C. H. Mastin, Marmaduke Shield, and myself would seem to justify the employment of sutures of the urethra. By the introduction and retention of a large catheter, and the careful coaptation of the torn ends, we meet all the indications, which are:

1st. To open a large passage for the accumulating fluids; 2d, to keep up a free flow of urine; 3d, to encourage rapid union of the two ends of the urethra and the walls of the cavity formed by the extravasation into the perineum; 4th, to prevent the formation of a cicatricial stricture of the urethra.

My results by these methods have thus far been so extremely satisfactory that I shall certainly continue their employment.

4. The sterilization of the urine by boric acid, as recommended by Palmer and others, or by salol following the method of Dreyfous and Lane, is of great importance in the after-treatment of all these cases, and should never be omitted. These remedies will be more effective in my judgment if combined with full doses of quinine.

In all cases in which perineal section is performed for impassable stricture, without other complications, the method of Mr. Wheelhouse, of Leeds, seems to me to meet every indication. The passage of the staff to the stricture shows the exact site of the latter; the insertion of the threads into the divided urethra, serves not only to hold it open and give an opportunity for the discovery of the proximal portion, but also seems to fix the anterior end, and render it easily recognizable during the operation. The least useful direction which Mr. Wheelhouse gives is that of turning the staff with the concavity of the curve upward, so as to hook it into the upper portion of the urethral wound. The instrument is sometimes in the way, has to be held by an assistant, and it seems to me does not afford much help during the operation.

COMPLETE SCLEROSIS OF GOLL'S COLUMNS AND CHRONIC SPINAL LEPTOMENINGITIS, WITH DEGENERATIVE CHANGES IN THE FIBRES OF THE ANTERIOR AND POSTERIOR ROOTS.

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The function of Goll's column, or, anatomically speaking, the posterior median column of the spinal cord, has long been a subject of inquiry by physiologists and pathologists. Schiff divided the posterior median column in animals, and the inference which he drew from his experiments was that the fibres of this portion of the cord conduct tactile sensations. The difficulties of dividing this column without injury of fibres belonging to other systems, are insuperable. With the exception of the experiments of Rossolymo upon guinea-pigs, experiments upon animals such as monkeys, dogs, and cats all tend to confirm the inference derived from pathological observations made upon cases of injury of the posterior roots, such as lesions of the cauda equina. There can, therefore, be no doubt that the fibres of Goll's column are formed from processes of the cells of the spinal ganglia which pass in by the posterior roots, run through the postero-external columns, and eventually enter the median column of the same side. It is probable that these fibres become smaller as they ascend, for if we take a definite area of Goll's column, the fibres of which were derived from the lumbar and sacral roots,[1] say in the upper dorsal region, and count the number of fibres in this area by projection of a photo-micrograph upon the screen, it will be found that a greater number of fibres will exist in the upper cervical region than in the dorsal. This, of course, will account for the area of degeneration becoming smaller, the higher the level of the section. The fibres of Goll's column end above in the post-pyramidal nucleus.

The cells of this nucleus send fibres to the cerebellum, consequently impulses travelling up the fibres of Goll's column eventually reach the cerebellum. *A priori*, we should expect that Goll's column does not transmit sensory impulses unless they be those relating to the muscular sense. Cases which have been published, and which I shall refer to later on in detail, together with the present case which I here record, in which there was a sclerosis causing total destruction of almost the whole of the fibres of Goll's column, show that this column certainly does not conduct

[1] This can be ascertained by comparison with limited areas of degeneration made experimentally.

any centripetal impulses connected with the sense of touch, heat and cold, or pain. In these cases there have been symptoms which would point to a loss of the muscular sense, but the question arises whether these symptoms could not have been explained by the affection of the roots within the spinal canal, or the peripheral nerves. That the impulses should eventually reach the middle lobe of the cerebellum tends to show that this column may be connected with the muscular sense ; moreover, the fact that in locomotor ataxy it is generally the seat of extensive degenerative changes in company with the postero-external column, also lends support to this view.[1]

Dr. Tooth considers that the posterior median column (consisting as it does of small fibres) conveys impulses from the viscera. I think cases of sclerosis of Goll's column do not support this view, although, anatomically speaking, it seems a plausible hypothesis; but, as I have before suggested, the fine nature of the fibres may be due to their long course. I have endeavored to show the importance of this subject from a physiological point of view by these introductory remarks. I will now pass on to a description of the case.

M. G., aged forty-six years, fly-master, was admitted into Charing Cross Hospital under the care of the late Dr. Pollock, March 25, 1884, and I am indebted to Dr. Murray for having given me the spinal cord and notes of this case.

There was nothing in the family history of the patient which would have any bearing upon the case, and no hereditary predisposition to disease was indicated. There was no history pointing to syphilis, rheumatism, or tuberculosis, and for more than thirty years he had been free from illness. His occupation, however, exposed him to cold and wet daily, and he has frequently been wet through. Moreover, previous to his illness he had drank heavily, taking as much as four pints of beer and several "goes" of spirits daily.

Present illness commenced early in 1882, with failure of power in the legs, the attack coming on while the patient was at his work in the morning. Two hours after the onset he was unable to walk. He suffered a great deal of pain, the legs becoming flexed and rigid. The loss of power gradually increased. About May, 1882, he noticed that the legs were wasting, and after September he was unable to walk even with support. A month or six weeks after the commencement of his illness, he noticed twitching of the hands, accompanied with weakness; and the arms began to waste, but he did not completely lose the use of them. His condition gradually became worse, and he was an inmate of several hospitals before admission to Charing Cross.

Present state: Patient is fairly well nourished. Temperature 99° to 100°. Skin cool and moist; no rash, œdema, or redness; complains of no pain.

Upper extremities, including muscular attachment to scapula and clavicle, are thin and uniformly wasted. There is no rigidity except in the phalangeal joints, which can hardly be moved at all, voluntarily or

[1] Secondary Degeneration of the Spinal Cord, p. 71.

passively. Other movements are weaker than normal, but no movements except those of the second and phalangeal joints absolutely lost. The weakness and wasting are more marked on the left than on the right side, and, perhaps, the thumb and first dorsal interosseous are more affected than other muscles. The grasp is performed by means of flexion of the metacarpal phalanges upon the metacarpal bones. He can just hold a spoon or knife with his right hand. With his left hand he cannot hold either. Frequent fibrillary movements seen. Sensations of tactile and painful impressions normal, also of heat and cold. Absence of elbow- and wrist-jerks.

Lower extremities: Hips and knee-joints are kept perpetually in a position of semi-flexion, the ankles extended. Patient can flex hips and knee-joints fully, but cannot straighten them beyond an angle of one hundred degrees. There is slight power of movement of the ankle-joints and left great-toe joint, all other movements of the joints in the feet absent. Wasting of the lower extremities, especially below the knees, more marked even than in the upper extremities. It seems to be uniform, and not to affect any particular group of muscles. The tendo-Achillis on both sides is rigid. No ankle-clonus, and on the left side no trace of knee-jerk obtained, but on the right a slight flicker can be observed. Tickling the soles is painful, and causes movement of knee- and hip-joints, especially of the latter.

Abdominal and epigastric reflexes absent on both sides, cremasteric obtained. No difficulty in micturition or defecation. Complete loss of sexual power and desire for the last two years. Patient has never noticed any difference in hearing, smelling, or tasting.

Vision: Movements of eyeballs and field of vision normal. Contraction of pupils to light and accommodation natural. No nystagmus.

Facial movements, movements of tongue, speaking, mastication, and swallowing performed naturally.

All muscles react to faradic current, but a considerably stronger current than normal required to produce contraction. Irritability to galvanism is distinctly diminished.[1] K. C. C. greater than A. C. C.

Chest is of fair shape, no cough or expectoration. Movements not good, unsymmetrical. There was evidence of consolidation over the right apex, there being weak but harsh breathing, defective resonance, and bronchophony.

Heart-sounds weak, no valvular disease, cardiac dulness not made out.

Digestive system: Tongue clean, no sickness. Bowels regular.

Spleen: Physical signs normal.

Liver: Somewhat enlarged.

Urine: No albumin, acid, sp. gr. 1020.

A weak faradic current was ordered to be applied every morning for about ten minutes, and a tonic was prescribed.

April 4. Chest symptoms became much worse, evidences of excavation of the right apex. Temperature 101°, considerable capillary bronchitis, weak action of the heart. Chest was ordered to be rubbed night and morning with lin. teberinth. acet. Sp. ætheris and mist. cinch. co. prescribed. The lung disease progressed rapidly, and on April 14th the temperature rose to 104°. April 15th the patient died.

Autopsy showed general tuberculosis, with formation of cavities in both

[1] At this time a galvanometer was not in use at the hospital.

lungs, congestion and œdema of the mucous membrane of the bronchial tubes, and a thickened pleura adherent in many places. There was an old cicatrix at the apex of the left lung, showing that the disease had been of considerable standing.

Heart: Valves healthy, degeneration of the muscular tissue.

Liver: Enlarged and fatty.

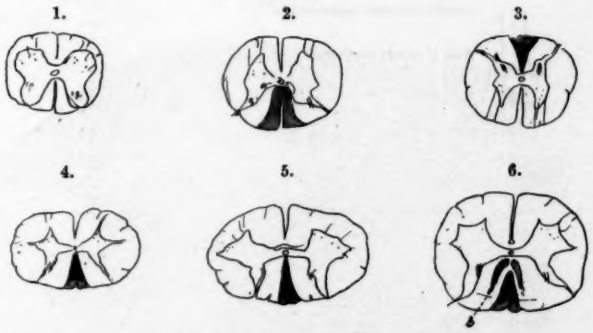
Kidneys: Normal, also spleen.

No note is made of the naked-eye appearance of the spinal cord, but when handed to me the dura mater appeared of normal thickness, and to the naked eye beyond the obvious sclerosis of Goll's column there was nothing very evident. I may state that I did not see the case, but after examination of the spinal cord I found it to be of unusual interest, and asked Dr. Murray to let me have the notes, which he was kind enough to give me.

The microscopical examination of the spinal cord, the roots, and ganglia, was made with the following results:

The naked-eye appearance of sclerosis of Goll's column did not become evident till the first lumbar segment, in this respect corresponding to other cases published. The appearances of the degeneration are shown in Fig. 1.

FIG. 1.

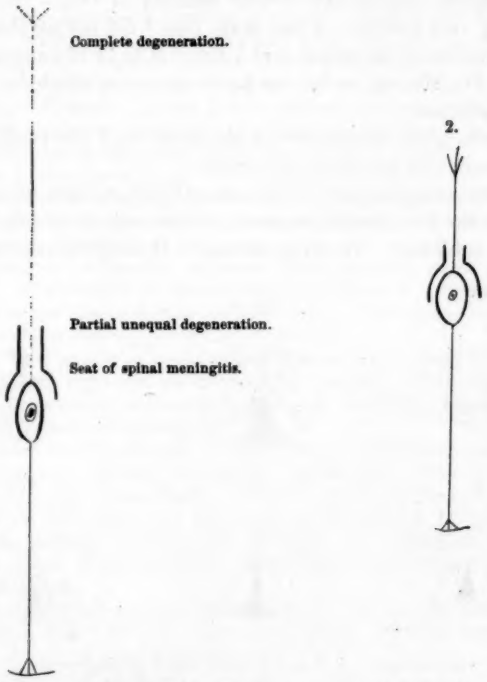


Sclerosis of Goll's column. 1. Lower lumbar, free from degeneration. 2. Scattered degeneration in posterior columns, indicated by light shading. Twelfth dorsal. 3. Dark shading, absolute degeneration of the greater part of Goll's column at level of eighth dorsal. 4. Second dorsal. 5. Eighth cervical. 6. Fourth cervical. Light shading partly degenerated fibres.

Careful microscopical examinations of the sections at different levels showed a chronic leptomeningitis, causing very considerable thickening of the pia mater with encroachment of the inflamed tissue upon the periphery of the cord. In this chronically-inflamed membrane were observed nerve-roots, the fibres of which were in various stages of degeneration, as shown in the accompanying Fig. 2. The number of

degenerative fibres found in different bundles varied considerably. Many bundles showed absolutely no degenerative changes. The anterior cornual cells, even where there was considerable degeneration of the anterior roots, showed no marked changes, consequently, the fibres were damaged after they had left the cord. Examination of the spinal ganglia showed no obvious changes in the cells or fibres in connection therewith. Inasmuch as Goll's column was sclerosed throughout, it must be

1. FIG. 2.

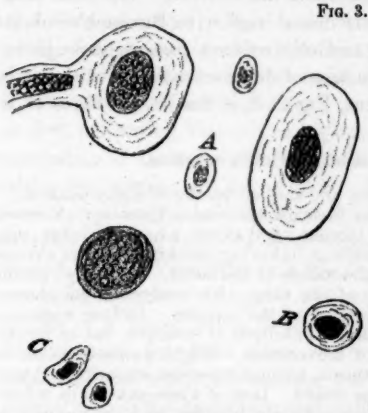


Nerve-fibres in different stages of degeneration. 1. Long fibres of Goll's column. 2. Short fibres of Burdach's column.

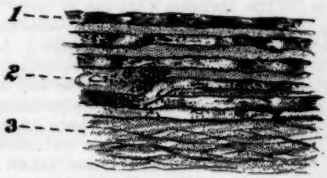
conceded that the fibres are damaged between the ganglia and the cord, the fibres of Goll's column suffering much more on account of their long course (just as in primary lateral sclerosis the cross-pyramidal tracts are affected probably on this account). The vessels in the thickened membrane, and particularly in the sclerosed portion of the cord, presented a remarkable appearance, viz.: an enormous thickening of the walls of the small arteries and arterioles (Fig. 3), and it is possible to

connect the complete destruction of the long fibres of Goll's column, with an arrest of nutrition due to this disease of the small vessels. It

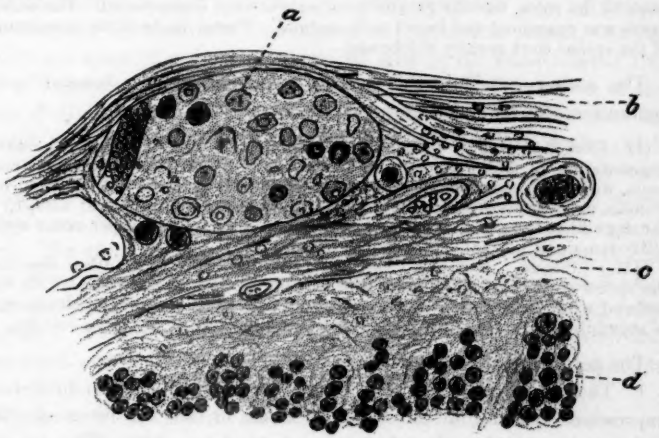
FIG. 3.



Cross-section of arteries and nerve-roots. *A, B, C.* Arteries of Goll's column, cervical region.



1, 2, 3. A portion of a small bundle of the posterior root, showing nerve-fibres with ganglion sheath broken up in various shapes of chronic degeneration. × 250 diameters.



First sacral, anterior root cut transversely. × 250 diameters. (GARDINER.)

seems to be of the nature of an arterio-capillary fibrosis, or rather a chronic periarteritis. The other columns of the cord showed no degenerative changes, and the fine nerve[1] plexus around the cells in Clarke's

[1] Krauss: "Im Pathologischen Anatomie der Tabes Dorsalis." Neurologisches Centralblatt, February, 1885.

column, which is the first seat of degenerative changes in locomotor ataxy, showed no atrophic change, proving conclusively that the short fibres of the postero-external column had not suffered. But there was a scattered degeneration in the lower dorsal region in Burdach's column. This was due to fibres belonging to Goll's column passing through in a median direction. The wing-like area of degeneration seen in the upper part of the cervical enlargement, Fig. 1, *b*, is due to the fibres of the brachial roots coming in.

Abstracts of cases of degeneration of Goll's columns.

(The sections were cut in celloidin and stained by the Weigert method.)

(I.) Degeneration der Gollschen Stränge bei einem Potator. (Vierordt, Leipzig, *Archiv. f. Psych.*, 1886.) A laborer, aged thirty, a heavy drinker, non-syphilitic, suffered with frequent stabbing, lightning pains in the lower extremities, likewise with weakness and uncertainty of the latter. No ataxy; normal muscular sense, normal sensibility of the skin. No tenderness on pressure of the nerves, but great pain on pressure of the muscles. Diffuse wasting of the muscles of the lower extremities, diminution of strength, but in proportion to the volume. Some ataxy of movements. Slight paræsthesia on the outer side of the calf. No hyperæsthesia, normal muscular sensation. Ataxic gait, inability to stand with the eyes closed. Loss of knee-jerks, skin reflexes remain. Normal reaction of muscles. Pupils, bladder, and rectum normal. For some time improvement, then a new symptom—creeping sensation in the legs. Later on, the upper extremities began to waste.

Autopsy: Sclerosis of Goll's column—chronic leptomeningitis—disease of some of the roots, but the greater number were not degenerated. The sciatic nerve was examined and found to be normal. Vessel-walls of the membranes of the spinal cord greatly thickened.

The author considers the case to be one of primary descending degeneration of Goll's column.

(II.) (*Friedreich. Über progressive Muskelatrophie*, Berlin, 1873.) A case of degeneration of Goll's column, and especially of the anterior and posterior roots, with enormous degenerative atrophy of the muscles. It occurred in a woman, aged thirty-five, who suffered with violent burning pains; atrophy of the legs first, then of the hands and forearm, then of the upper arm; sensibility remained normal. Sphincters natural.

(III.) (*Pierret. Archiv de Physiologie*, 1875, p. 74.) This author describes the spinal cord of an old woman who, during the last eleven years of life had suffered with formication in the arms and legs, with very slight diminution of sensibility. In this case there was a sclerosis limited to Goll's column.

The points of interest in these cases are:

1. That Goll's column may be connected with the conduction of impressions relating to the muscular sense, or that the fibres of these columns have some other function not yet determined. The singular absence of visceral complications in these cases does not lend support to Dr. Tooth's view that Goll's column conducts visceral sensations.

2. The resemblance clinically between the case here recorded and that recorded by Vierordt—viz., briefly summarized in both cases, a history of alcoholism, pains in the lower extremities followed by wasting, no loss of sensation (excepting a muscular sense); after a time the upper extremities affected in a similar manner to the lower, death from tuber-

culosis. The pathological condition met with in the cord was also very similar, both as regards the area of degeneration and the partial affection of the roots. The complete destruction of Goll's column, excepting a few fibres posteriorly in the cervical region and medulla, and the absence of degeneration elsewhere in the cord, both in the other tracts and the cells and fibres of the gray matter, were present in both.

3. The absence of knee-jerks (and even the inability to stand with the eyes shut, noticed by Vierordt in his case) could be accounted for by the degeneration of the terminations of the motor nerves, which would also explain the wasting of the muscles. The degeneration of the motor nerve-endings might be explained by the alcoholism or by the lepto-meningitis, causing nutritive disturbances of the anterior roots. In my case, and also in Vierordt's to a less degree, some of the anterior roots showed degenerative changes. The centre of nutrition, even of the end-plate of a motor nerve, is the ganglion-cell. Although the lepto-meningitis may not have been severe enough to interfere with the nutrition of the whole nerve-fibre, yet it was sufficient to produce a degeneration of the terminals, especially of the long fibres of the legs and arms, which are proportionally much more remote from their seat of nutrition than the nerves to the trunk-muscles.

With regard to Goll's column, the same inference may be drawn. The complete destruction of this column in the cervical region, whereas hardly any trace of degeneration can be seen in the lower lumbar and sacral regions, may be explained thus. The seat of nutrition of the fibres of Goll's column is the spinal ganglion. We have seen that the ganglia and the roots are involved in an inflammatory process, with great thickening of the vessel-walls. The portions of these fibres most remote from the seat of nutrition will suffer; consequently the fibres which come from the leg will be degenerated most high up in the spinal cord. We can only explain in this way the complete escape of the short fibres which make up the postero-external column, and which soon come to their station in Clarke's column, hence are not atrophied (*vide* diagram). Vierordt considers that Goll's column in his case degenerated downward, and I think the above explanation would coincide with this view.

Moreover, we have in the (so-called) idiopathic lateral sclerosis a confirmation of what I have regarded as the explanation of sclerosis of Goll's column. In this disease the long fibre-systems of the cross-pyramidal tracts are alone degenerated, and the process invariably commences in the legs, because the fibres going to the anterior horns of the lumbar and sacral regions have a much longer course, and are more remote from their centre of nutrition, hence more readily undergo degenerative changes when their nutrition is interfered with, for even the terminals

of the fibres are dependent for their nutrition upon connection with the ganglion cells from which they originally grew.

Another explanation of the degeneration of Goll's column to the exclusion of all others has been suggested—that is, an encroachment of the fibrous tissue, which certainly is more marked in the posterior median column of the cervical region of the normal spinal cord.

ANTISEPSIS AND ASEPSIS BEFORE AND AFTER MAJOR GYNECOLOGICAL OPERATIONS.

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While operative surgery is ever a more brilliant subject for a discourse, there are some plain matters which lie at the bottom of all successful work about which surgeons are not yet practically united, and my observation for some years past has taught me that the rising gynecologists need above all else minute painstaking instructions in these fundamental principles—the practical significance of "sepsis," "antisepsis," and "asepsis." The greatest gynecological want is that men should be taught to apply in the simplest way the recent teachings of bacteriology.

The touchstone revealing the character of a man's work is the view he holds of this important question.

"Cleanliness" (microscopic), the methods of securing it, and the methods of maintaining it, are the very bone and marrow of all good surgical work to-day.

"Sepsis"[1] is a morbid condition of the body, due to the action of specific germs, which are the septic agents.

"Antisepsis" is any efficient means put in action by which these germs are rendered inactive, destroyed, or removed from the body.

"Asepsis" is the condition of the body, or a part of the body, free from septic germs.

Cleanliness in this sense is asepsis, and is microscopic, not macroscopic.

These definitions at once do honor to the great army of workers who, within the past twenty years, have shown us why suppuration and sloughing (septic processes) were wont to prevent the rapid healing of fresh wounds. They at the same time place a wide gulf between those

[1] "Sepsis" is used in this connection as a convenient general term to designate traumatic infections.

who thus accept the conclusions of our contemporaries working in the bacteriological field, endeavoring to ground all their surgical work upon the principles by them laid down, and those on the other side who, with a remarkable pertinacity, still insist that nothing new has been discovered, and that scientific surgery has received no riches from the bacteriological laboratory; even resorting to an unworthy *double-entendre* on the word "*cleanliness*," trying to confuse the new "microscopic" with the old "macroscopic" cleanliness, to prove that "since the fathers fell asleep all things continue as they were."

This microscopic cleanliness is the keynote of all successful gynecological surgery, and must pervade the work from beginning to end.

The great growth in the success of gynecological operations within the past few years has been due to the simplification and perfection of the means taken to secure this important end, with the abandonment of the complicated unnecessary machinery at first hastily thrown up to protect our patients, as soon as we learned that the enemies to our success were the hardy, minute, all-pervading microörganisms.

I shall in this paper dwell at some length upon this and some other important principles, controlling all of our gynecological work, illustrating the application of the former by means of major cases, with a clear understanding that the same laws apply to the lesser or minor gynecological cases—here, as elsewhere, the major thus including the minor.

The applications of these principles to a given operation must be considered at three different periods:

First. The condition of and the preparation of the patient for the operation, and the preparation of operator, assistants, instruments, and dressings.

Second. The personal cleanliness of the operator and his assistants during the operation; and

Third. The care of the patient and the wound after the operation.

The Selection of the Patient.

It is important that a gynecological operator should first learn to select his cases with care, making sure that no grave organic disease complicates the local trouble, that there is no other coexisting ill from which the patient must soon die, even if she be cured of a tumor or other pelvic ailment.

An oversight of this kind is often attended by the most serious immediate consequences, and lives are thus frequently shortened, which could have been preserved for months or years by a little more insight and careful preliminary analysis. Surely nothing can exceed the chagrin of a specialist who has had the narrowness of his horizon demonstrated by any such accident.

I venture, therefore, to name in a brief review some of the chief stumbling-blocks which I have thus repeatedly found in my way.

To avoid this error a careful history of every case must be taken, including notes upon family tendencies to particular diseases, such as cancer, Bright's disease, phthisis. An examination should always be made into the patient's mental condition, with inquiry about insanity in the family, or previous attacks in the patient. It is well known that a fresh attack of mania may be precipitated by an operation, and a great many patients in gynecological hospitals are paranoiacs. Next look into the condition of the heart and lungs. I have seen a patient with a large dilated heart die from the simple tapping of an ascites. With a hydrothorax it would be dangerous even to give an anæsthetic.

If the heart has a valvular lesion I prefer chloroform anæsthesia, which I have thus employed repeatedly.

Phthisis, however, even when far advanced, does not necessarily contra-indicate operation. Some nine years ago I operated on the relaxed vaginal outlet of a woman so far reduced by this disease that she could scarcely drag herself from room to room. She at once improved remarkably, and for years seemed comparatively well, and is, for aught I know to the contrary, living to-day.

I would even recommend the removal of tuberculous tubes and ovaries, and draining a tuberculous peritonitis in a phthisical patient, where the abdominal disease has advanced so far as to be distressing to the patient. The improvement in such cases is sometimes very great and prolonged.

Below the diaphragm lie a number of dangerous traps for the unwary gynecologist.

Abscess of the liver may prove a complication. I recently lost a case where there was gangrene of the right ovary and tube, with gangrene of the vermiform appendix, which had sloughed off at its attachment to the colon. The patient recovered from the operation, got up, and went about, but died on the twenty-sixth day from a large concealed metastatic abscess in the liver, arising from the gangrenous appendix, transmitted through the portal system. The abscess ruptured into the bronchial tube, and drowned her at once.

Cancer of the ovary is not unfrequently complicated by a cancer of the pylorus, which makes pelvic operation futile. Two such cases have occurred in my experience. In the first, I operated removing the large brain-like ovary. The patient recovered, and went home, and died some months later of her pyloric disease.

In the second case I refused to do more than tap the abdomen, removing a large ascitic accumulation. The autopsy confirmed the diagnosis, revealing as well disseminated cancerous plates on the peritoneum.

A peri-appendicitis with adhesions is frequently found associated with tubo-ovarian inflammatory diseases, and in no way contra-indicates opera-

tion. In one of my cases of pyosalpinx there was, as well, an independent abscess of the vermiform appendix.

Of all the organs in the body whose functional activity is vitally important to the convalescent, after a serious gynecological operation, the kidneys may be said to be paramount, and the writer would feel himself criminally negligent if he failed in any instance to determine the exact condition of the renal secretion before opening the abdomen.

Careful statistics will show that with the expulsion of sepsis from the mortality record after gynecological operations, uræmia has stepped very high in the list of fatalities.

Without entering into the causes, we have but to recall the familiar facts that the prolonged presence of pus in the body is productive of serious changes in the kidneys, heart, and liver; and again that the gonorrhœa which produces the pyosalpinx, may produce at the same time, by travelling up the bladder and ureter, a pyelo-nephrosis; and more important still, because most frequent, we must recall the fact that any mechanical obstruction to the flow of urine tends to produce nephritis.

My work has abundantly proven these observations, showing that the presence of pelvic tumors is frequently a cause of albuminuria.

In the ninth paper of my recent work, I issued a preliminary report on the urinary examination of ninety-five gynecological cases.[1] Out of these were fifty cases of abdominal section taken successively, showing the presence of some albumin in fifteen instances, or thirty per cent.

In eight of the fifteen, hyaline and granular casts appeared. Thus sixteen per cent. had both albumin and casts in their urine. The significance of this discovery may be appreciated by citing such an extreme case as that in the third article of the report (*v. supra*), where a colored woman died (without operation) of the renal changes induced by a large myoma uteri. The anatomical diagnosis reads: "Myoma of uterus, with central necrosis; dilatation of ureters from pressure; pyelo-nephrosis; chronic passive congestion and emphysema of lungs; displacement of viscera and deformity of thorax, in consequence of tumor. General marasmus. Heart hypertrophy, with hyaline calcific and fatty degeneration."

I do not as yet wish to lay too much stress on these figures, which are astonishingly large, but insist that if only one or two per cent. are found to be thus affected, the investigation is a vitally important one!

Albuminuria and milder grades of Bright's disease are not contra-indications: I do not hesitate to operate where I find albuminuria and even casts; but when it is necessary to operate on such cases, it is better to be forewarned as to the dangers, so that by using chloroform, and

[1] The Johns Hopkins Hospital Reports, vol. ii., Nos. 3, 4. Paper ix.

shortening the time of the anæsthesia, and by supplying external heat, the shock to the system may be as slight as possible; also by the use of the drainage-tube we may avoid to the utmost any taxation of the emunctories. We must also avoid opiates, and by free purgation save and supplement the crippled renal emunctory to the utmost. Advanced Bright's disease is an absolute contra-indication against any elective gynecological operation requiring anæsthesia.

In three cases out of fifty, two pus cases and one large ovarian tumor, in which albumin with hyaline and granular casts was found before operation, the urine exhibited nothing abnormal upon their discharge from the hospital, showing that the tumors had acted as causes in producing the renal disturbance.

Preparation of the Patient for the Operation.

The guiding rule in fixing the date for operation is to take as much time as is necessary to get the patient in the best possible condition her disease will admit of. In a suppurative peritonitis, and ruptured extra-uterine pregnancy, there is, as a rule, no time for previous preparation beyond the administration of a purgative and enema and some stimulants, while the surgeon is getting to the patient; but in almost all other cases we shall do better to make haste slowly.

With rest in bed for one or two weeks or longer, and with careful feeding five or six times a day, a wretched, pinched, and worn-out body will usually recover some of its pristine vigor, and be thus better able to stand the shock of an operation.

It is of paramount importance in this connection to recognize the fact that ovarian and tubal abscesses are naturally characterized by repeated attacks of pelvic peritonitis, confining the patient to bed for one or more weeks with a swelled abdomen, quickened pulse, elevated temperature, and severe abdominal pains. But after one of these attacks is over, the patient usually improves until she feels quite well again.

It is better not to operate during such an attack, but to wait for the interval of comparative health and strength, when the operation will be better borne. One must, however, carefully distinguish the profounder shock with collapse, due to an abscess ruptured into the free peritoneal cavity, a condition admitting of no delay.

Where the operator selects his own time for an operation, he should at once begin not only to tone up the patient's general health by rest and feeding, but to quicken the action of the skin and the bowels by baths and free evacuations, and to prepare the abdomen and genitals by daily washing, and two or three days beforehand by careful scrubbing, along with daily vaginal douches, one pint of a solution of bichloride of mercury (1 : 5000) or carbolic acid (3 per cent.).

A thin poultice of sapo viridis, one foot square, laid on the abdomen two hours beforehand, softens the superficial layer of epithelium for the last washing, which it receives on the operating-table. A half-hour before the operation the patient receives forty grains of the subnitrate of bismuth, and, if there is no contra-indication, a quarter of a grain of morphia. The latter makes the patient more susceptible to, and less anxious about, the anæsthetic, and the bismuth acts by contracting the intestines and thus allowing more room to work in the abdominal cavity.

Instruments, Ligatures, Dressings.

Five years ago I used for the disinfection of my instruments a double-walled copper oven, raised to the temperature of 140° C. (315° F.), for an hour. It was then demonstrated by bacteriologists that moist heat at 212° F. (100° C.) was even more effective.

It is now more than a year since I brought from Europe a newly-devised Rohrbeck oven for disinfection by steam. It is possible in this apparatus, after due exposure to the steam, by turning a ventilator and shutting off the heat, to convert it at once into a drying oven, thus automatically drying the instruments and dressings.

Fig. 1.

My final step in this direction was taken some months ago when I adopted a simple copper steam-sterilizer (Arnold's), made in America, for the disinfection of instruments and all dressings. Dr. Abbot's tests have shown this to be thoroughly reliable, giving a uniform heat of 212° F. in all parts of the cylinder, and its simplicity commends it for all practical purposes.

After an operation of a septic nature, the instruments are first washed, and then sterilized for a half-hour in this boiler, when they are taken out and dried at once. Again before the next operation they are laid in the sterilizer for a half-hour, when they are removed and placed in the trays and immersed in water, ready for use. As soon as the instruments are removed, the dressings—absorbent cotton and bandage—are put in, and left there until required at the close of the operation.

So satisfactory, so thorough, and so reliable is this steam disinfection, that I have also entirely given up boiling the silk ligatures, as well as the use of any antiseptic solutions, as heretofore, in their preparation, adopting instead a plan invented by Dr. Halsted. The silk is cut in required lengths and wound on glass spools, these are then put in a long test-tube of large calibre, plugged with cotton, in the same manner as the gelatine culture-tubes. (Fig. 1.) The tube thus loaded is placed

in the steam cylinder for a half-hour without removing the cotton; it is then taken out, and put back again for a half-hour on the following day, when the sterilization is absolutely certain.

The cotton plug must not at any time be removed from the tube until the ligatures are needed for use. Silk prepared in this way retains all its strength and remains sterile indefinitely until the tube is uncorked.

With the steam thus in constant use, towels and gauze, and even long stockings drawn over the legs in perineal operations, are also readily sterilized without the use of any antiseptic solutions.

The Operator and the Assistants.

The operator and his assistants should spend not less than ten minutes in scrubbing their hands with soap and warm water, devoting particular attention to the nails. That this alone is not sufficient to remove all the pus germs from the fingers, I have demonstrated in a series of experiments in which Dr. Ghriskey, the gynecological assistant, has each time succeeded in getting staphylococcus cultures after the most thorough, careful scrubbing on my part. Moreover, the cultures thus made were always taken from the nail of the index finger of my left hand, to which I had devoted the most painstaking attention in the cleansing. I follow this washing with water by an immersion of the hands for a half minute in a saturated solution of potas. permang., this is next removed by a saturated solution of oxalic acid in water, and finally the hands are immersed in a bichloride of mercury solution (1 : 1000) for one minute.

I am at present conducting a series of experiments to determine whether the danger of infection is as great after the bichloride as after the soap and water, when I shall be able to decide on scientific grounds as to the further use or the discontinuance of the drug.

When the patient is placed on the table for operation, her abdomen is first washed with soap and water followed by ether, and finally the bichloride in water (1 : 1000). The field of operation thus prepared is secluded by aseptic sterilized towels, placed across the chest and over the thighs and on either side; a piece of gauze, large enough to reach from the chest to the knees, covers the whole abdomen. A slit is cut in the centre of this, and when its edges are pulled apart the abdomen is bared from umbilicus to pubes. Through this opening, thus protected on all sides, the operation is performed.

The central idea which must dominate operator and assistants throughout the operation is, that having thus come to the work under conditions absolutely aseptic, they must be kept so throughout. There must be no break in the phalanx, such as occurs when operator or assistant shakes hands with visitors or touches unprepared parts of the patient, or an assistant dips water out of the reservoir with a cup or

pitcher which has been standing on a table or shelf not included in the field prepared for the operation, etc., *ad infinitum*, including hosts of slips in the technique, only avoided after long experience, which finally develops a keenness of perception for inconsistencies in the technique which may well be designated an "antiseptic conscience."

It is true that all these antiseptic precautions are frequently set at naught by the amount of sepsis encountered inside the patient as soon as the abdomen is opened.

Shall we for this reason relax our precautions and be careless about outside contamination even in these cases? By no means; the rule must be in all cases the utmost cleanliness attainable under the circumstances, even the worst. The principle must never be voluntarily sacrificed by the operator. In addition to this we cannot be sure of such hastily-drawn conclusions, for much of this ill-looking pus found in tubes and ovaries contains no germs which can be demonstrated, and is often, if at all, but mildly septic.

Asepsis after the Operation.

After a clean aseptic operation one great danger of septic invasion is from suppuration in the wound in the abdominal wall. Every effort should, therefore, be directed toward securing primary union. Septic material may work into the lips of the wound, or down the suture-tracks, the silk sutures acting like setons, the poison thus even penetrating the abdomen and causing death. A stitch-hole abscess in the abdominal wall is, unfortunately, a common sequence to an abdominal operation. This painful complication, which so seriously retards the recovery, can best be avoided by the following measures: the abdominal wound must be accurately approximated by the sterilized silk sutures, deep and superficial, three or four of each to the inch. The whole line of the incision thus closed is then coated with a mixture of iodoform and collodion (1:15) in a viscid state. This mixture is applied to every suture, with especial care to *saturate* every visible part of it with the viscid fluid, which dries at once. By this means the wound is concealed and the silk sutures are transformed from a bundle of threads with powers of capillary attraction, into a solid cord, like silkworm-gut or silver wire. The whole wound is at once dusted thickly over with iodoform and boric acid powder (1:7), which adheres tightly to the collodion. This makes an admirable occlusive dressing. A few layers of simple sterilized absorbent cotton are next applied, and finally over all a many-tailed bandage, held down by two tails between the thighs, pinned in front.

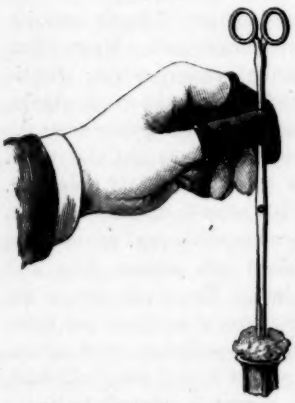
Whenever a drainage-tube is inserted, which translated practically means, whenever an open hole is left in the abdomen, the dangers of infection, after the operation, are greatly enhanced. The open tract down into the abdomen, with the presence there of free serum, as a culture medium, affords an excellent nidus for infection. The sepsis

thus entering does not come from the air, nor apparently from the surrounding skin of the patient, but from the hands of the man who dresses the tube. A ready explanation of this exists in the fact that it is impossible, where a number of cases need dressing, to cleanse the hands each time with the same thoroughness considered necessary before an abdominal section; and yet the wound is the same, and the same absolute cleanliness is certainly called for.

My treatment of the tube is as follows: Just before applying the dressings and bandage, a small piece of sponge is grasped in the tube-forceps (specially constructed for the purpose) and the tube is cleaned with this until it is dry; a long, loose roll of gauze is then laid in the tube, which acts by capillary attraction, continuously sucking up and discharging fluids from the floor of the pelvis on to the dry absorbent dressings above.

In the subsequent dressings the tube is cleaned, first by lifting out the piece of gauze saturated with blood, then one of a number of little balls of sterilized cotton, about a third of an inch in diameter, kept in a glass-stoppered bottle, is picked up in the tube-forceps and carried to the bottom of the tube, at once soaking up any fluid lying there; this is then thrown away, and the process repeated until the tube is dry, when a gauze plug is again inserted until the next dressing. The great danger of contamination lies in handling the tube, and the gauze, and cotton dressings which enter it. To avoid this, I have arranged that while manipulating the drainage-tube and cotton balls, the thumb, index, and middle fingers of both hands are covered with rubber finger-stalls, taken out of a carbolic solution and washed and put back after using. By using these it is easy to prevent the naked skin from coming into contact with the tube or any substance entering it. As soon as a free discharge from the pelvis ceases (generally from the second to the third day after operation), the tube is pulled entirely out, and the hole obliterated by drawing up the loose suture lying in its track and left untied for this purpose.

FIG. 2.



Hand grasping tube-forceps.

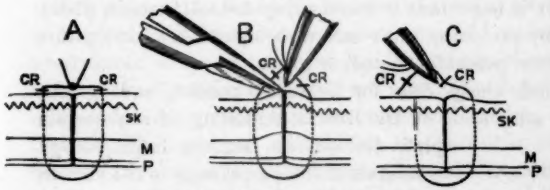
The catheterization of the patient is not a minor matter, but one of the most important procedures, for by means of the catheter, through carelessness, a violent cystitis can be excited. To catheterize, the nurse

must expose the parts, cleanse the genitals, very carefully wiping the orifice of the urethra with a little absorbent cotton, and only then catheterize when it is impossible that any foreign matter can be carried up into the bladder on the point of the catheter from the outside.

The sutures closing the abdominal incision should all be removed in from seven to eight days. Care must be taken in their removal not to convert this simple step into a source of irritation or infection of the wound.

There is usually a little cake of incrusted lymph and powder where the suture emerges from the skin; and in removing the suture its loop must not be cut above, but below this point, where it is moist and pliable; this will avoid dragging the ragged foreign mass clinging to the suture, through its whole long track and through the peritoneum. To get the suture out, catch its free ends in a pair of dressing-forceps and pull it up a little, and then carefully clip one side of the loop in the moist

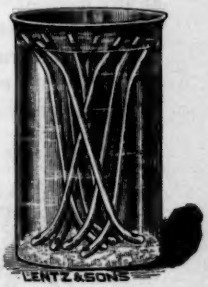
FIG. 3.



Removal of the abdominal suture.

A shows the suture *in situ* passing through skin, muscle, and peritoneum. *CR, CR* are the little masses of incrustation of hardened lymph, discharged from the suture-track. *B* shows the removal of the suture, elevated and cut below the crust. *C* shows the direction in which it is to be pulled out.

FIG. 4.



Glass catheters.

part; then remove it by pulling it toward the side on which it has been cut. If the pull is made in the opposite direction the tendency will be to drag the freshly-united surfaces apart.

I have for years used nothing but glass catheters, which are cheaper and cleaner than any others. Several of these can be conveniently kept in a large test-tube, closed with cotton and sterilized in the same manner as the ligatures. Or, they can be kept standing in a five-per-cent carbolic acid solution in a jar with some cotton on the bottom, to prevent them from breaking when dropped in. Each catheter should be washed thoroughly after using it, and preserved in the solution until wanted again. A sigmoid self-retaining catheter can be readily made from one of these over the alcohol lamp. My catheters are now in general use all over the country.

ASEPSIS AWAY FROM THE HOSPITAL.

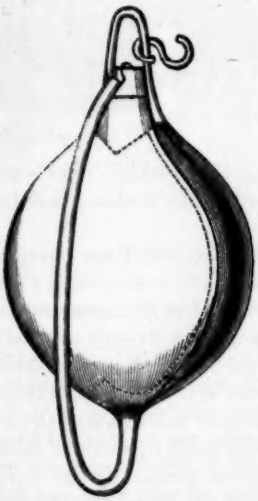
It is manifestly not very difficult with careful training amidst all the conveniences of a specially-prepared clinic, to keep up an aseptic condition for any given length of time.

A question of the utmost practical importance, which has not yet been answered, is, "How far can we successfully apply these principles to emergency cases, and to operations in private houses?"

The difficulties in the way of operating aseptically in private, especially among the poor and middle classes, are due, in part, to the unskilled voluntary assistants in the preliminary preparations, and to the use of various household vessels and utensils whose microscopic cleanliness is uncertain—thus, the water used, the boiler, the pitchers and the basins, and the towels are each and all open to grave suspicion. These sources of error in the technique are dangerous, and must hang like a pall on the conscience of a careful man. They can be avoided by the following simple devices. Instruments which have been sterilized are put at once in tin, copper, or nickel-plated boxes, and, together with the ligatures in the sterilized tubes, and the dressings wrapped in wax paper, should be carefully packed away in the operator's kit ready for a call at any moment. It is important to avoid using domestic towels, plates, and other dishes by providing one's self with instrument and ligature trays, of hard rubber, porcelain-coated, or glass.

A convenient and cheap dish for ligatures, needles, and needle-holder, is a clever adaptation of Dr. Robb's, consisting of a porcelain plate divided into sections large enough to hold all of these separately in the various compartments.

FIG. 5.



Collapsable rubber bag holding five quarts of water, used in place of a pitcher.

Three difficulties and inconsistencies remain to be overcome: the water, the boiler, and the pitchers, not one of which is safe for use as it is handed to us labelled "clean" by the housewife or servant. I have overcome this weakness in the technique by carrying a copper boiler with me, 11x16x10 inches, which just fills the leather case holding my instruments, trays, and dressings, all of which are thus packed into the boiler.

I use instead of pitchers a bag made of rubber, ending in a hose below, holding five quarts. This is hung up by the hook, and the water is drawn off by unhooking the hose hanging on the lip of the bag and letting the end down, when the water rushes out into the basin. Tap-water boiled for an hour is perfectly safe.

To such an extent has the elaborate technique of antiseptic surgery been simplified. Let no one imagine that there is any relaxation of the "antiseptic conscience." The appear-

ance of laxity in dispensing, as far as possible, with antiseptic drugs, is in appearance only; the fact is, that in disposing of these means the necessity of keeping the principle constantly in view is all the greater and more urgent. If I shall have thus elucidated the principles and persuaded one man to exercise more care in securing and maintaining microscopic cleanliness in his work, and if by any simplification of the technique I have made the difficulties in the path of rigid scientific cleanliness seem a little less, I shall feel well rewarded for my efforts.

THE SURGICAL TREATMENT OF ANEURISM OF THE ARCUS AORTÆ, WITH A CASE CURED BY THE LORETA-BARWELL METHOD.

By Julius Rosenstirn, M.D.,
San Francisco, Cal.

The surgical treatment of aneurism of the first two-thirds of the arch of the aorta and anonyma deserves more consideration than the general practitioner is ready to grant it. The recognition of the disease has been generally associated with an absolutely hopeless prognosis. A more or less energetic trial of the improved Valsalva, or Tufnell-Balfour treatment, is made, and that failing, the patient is left to his fate. In view of the comparatively numerous favorable results obtained by surgical treatment in cases where the combined rest and iodide of potassium treatment failed and symptoms of immediate danger to life had appeared, hesitation to apply surgical measures seems unreasonable.

The term "Surgical Treatment of Aortic Aneurism" unites under its heading methods of great variety. Electrolysis, the introduction of various foreign bodies into the aneurism, alone or combined with the application of electricity, and last, but not least, the ligation of the right or left carotid and subclavian arteries, either simultaneously or separately, have been recommended. Most of these have given undoubted results in cases with the most urgent and dangerous symptoms. Brasdor's operation, the ligation of the carotid and subclavian arteries, shows the best record, especially if done simultaneously. In an essay that appeared about three years ago in Vol. xxxiv. Part I. of Langenbeck's *Archives of Surgery*, I have compiled all the cases of Brasdor's operation for aneurism of the arcus aortæ and anonyma up to 1885. Of the 38 simultaneous operations, 6 had been made before the time of Lister, 32 with antiseptic precautions. Of these 32 cases, 14 had lived one year and longer after the operation, able to work; 5 were greatly improved; 5 were not improved, and only 8 died within the week immediately following the operation. Similar, though not quite as favorable, results were obtained by the separate ligation of the two arteries, as also by the single ligation of either the right carotid or subclavian. Even the ligature of the left common carotid, in 6 cases of

aneurism of the transverse part of the arcus aortæ, has given 2 cures of one year and longer, 2 improvements, and only 2 deaths.

Timothy Holmes operated October 21, 1875, on a woman, twenty-one years old, with large pulsating swellings in the first and second intercostal spaces, no pulsation in the arm arteries, and loss of voice in consequence of paralysis of one vocal cord. The pulsating tumor disappeared, she regained her voice completely, and in the meeting of the Royal Medical and Chirurgical Society of February, 1883, eight years after the operation, the operator spoke of her being at work at the time in a position as housekeeper. My own case of simultaneous ligature of the carotid and subclavian arteries, in a woman forty-two years old, is the second longest cure on record.

After having subjected my patient to a long but ineffectual treatment by other methods, I operated on her November 26, 1883. The case was brought, before and after operation, before the German Medical and the San Francisco Medical Societies. The woman is comfortable, and at work to-day.

The patient whose case I report has been operated upon by the Loreta-Barwell method, the introduction of wire into the aneurismal sac, combined with electrolysis. The excellent result obtained justifies my calling attention to it, and seems to me a unique illustration of the curative possibilities of modern surgery in these cases when assisted by youth and vigor.

Founded on Bacelli's recommendation of the introduction of fine watch-springs, Loreta originated the operation of introducing fine silver wire into aneurisms, and Barwell proposed to combine electrolysis with it. His first case, in 1886, proved unsuccessful; a second one was operated upon by Dr. Kerr with the same result. In a third case, however, a man of fifty-six years, he succeeded in improving the patient's condition materially, although swelling and pulsations remained.

My patient, born in 1864, showed an early but decided inclination toward obesity. When twelve years old he weighed 230 pounds, but reduced his weight after entering Harvard, November, 1882, by training for the class crew of 1886. The training consisted of rowing from four to ten miles daily, or exercises with chest-weights, dumb-bells, etc. Dietetic rules were to abstain from sweets, alcohol, and tobacco, and an urgent request made to retire by 10 o'clock at night. This last recommendation was rarely acted upon. Several practice races were rowed, until the great Columbia race in July, 1883, took place (at that time his weight was 185 pounds). The Harvard crew won under great strain. After coming home he suffered from palpitation of the heart, and Dr. Bennet, whom he consulted, thought there was an incipient aneurism. On his return to Cambridge he again began to row, but had soon to give it up and submit to treatment. By the beginning of 1885 the disagreeable symptoms had mostly disappeared. He retired from active engagement in athletic sports, but gained a prominent position in the fast set of Harvard. He became a devoted Lutheran; he loved wine, women, and song—the two former most. He consulted me for the

first time in May, 1888, previous to an intended trip to New York. His weight at that time was between 250 and 260 pounds. He suffered from palpitations of the heart and slight dyspnœa. From my notes I glean that his pulse was weak (90) and somewhat irregular. I noticed a faint but distinct bruit, commencing over the second right intercostal space and extending to the right fossa supra-clavicularis. I gave him very strict directions about exercise and diet, and he left for New York. During the four months following until I saw him again, on October 13, 1888, he gave himself up to an unbroken series of excesses *in Baccho et Venere*. On that day he had what was described to me as a fainting-fit, and I was called in. He had gained some in flesh. His pulse was 100, very weak and intermittent, the right hardly perceptible. Upon examination, I found a distinct pulsating tumor occupying the second and third intercostal spaces in the right parasternal line; no discoloration of the skin. Percussion showed a dulness of about two inches square in that region. Auscultation revealed the usual aneurismatic bruit over the tumor. The apex-beat was obscured by the immense layer of fat, and percussion could not distinctly outline a suspected dilatation. The first sound seemed clear, the second was changed to a loud bruit. Absolute rest in bed was immediately ordered, and he was put on low liquid diet, with large doses of iodide of potassium and cautious massage of extremities.

This treatment was strictly kept up for three months without any apparent effect except that his solid flesh melted and his pulse gained more regularity. He suffered during this time excessive pains in his right shoulder and arm, and protracted attacks of suffocation, which, in several instances, necessitated inhalations of oxygen and the aid of artificial respiration. I had spoken to the family of the various surgical interferences and proposed to try simultaneous ligation of the carotid and subclavian arteries, but they very strongly objected to any cutting operation, and asked me to give electricity a complete trial first. On January 13, 1889, accordingly, I inserted an insulated needle, connected with the positive pole of a galvanic battery, into the aneurismal sac. An Apostoli electrode connected with the negative pole was placed over and to the left of the sternum; sixteen large-sized cells were used. The galvanometer showed about 70 milliampères, the current was applied during twenty minutes. On January 26th the operation was repeated with two needles. The effect of both operations was *nil*. As the symptoms grew rather more aggravated, after a consultation with my *confrères*, and assisted by Dr. Hahn, I performed the Loreta-Barwell operation on February 24th. I took an explorative trocar in order to be able to use a larger-sized wire than had been employed heretofore. I drew the skin from near the axillary line toward the tumor, penetrated and went into the aneurism. During six or seven minutes a slowly increasing current was directed through the trocar until the same number of elements was at work as before. The lance of the trocar was carefully withdrawn and about twenty-six inches of spirally wound, moderately thick, softened silver wire, such as would be used in trachelorrhaphy (about No. 28), introduced through the canula. I was fortunate enough to be able to push the wire perfectly into the sac with the lance, and after an electrolysis of about thirty minutes withdrew the trocar, carefully drawing the skin into its place again. The patient bore the operation remarkably well. Salt-bags were applied over the aneurism as at the two previous operations. After a few days the pains began to subside, and after two weeks the breathing became easy

and no more attacks of suffocation occurred. There was a slight superficial sloughing of the skin where the trocar had entered and probably been imperfectly insulated, but no other untoward symptom followed. The tumor grew gradually smaller and harder, the pulsations less, until by April 15th they had entirely disappeared. The patient has been steadily improving; he is in the most excellent health, able to undergo any ordinary exercise, and weighs, with 6 feet in height and 43 inches around the chest, only 185 pounds.

The first sphygmographic tracings showed a marked influence of the, then existing, fatty infiltrations perhaps associated with degeneration of the heart-muscle (myocarditis). In the course of the Tufnell-Balfour treatment an improvement was witnessed. At the time of writing the sphygmograph shows yet a difference in the pulse of each side which the finger can hardly detect; but except this and a slight elevation and dulness on percussion at the former site of the aneurismal swelling, nothing remains to remind us of the former disease.

The excellent result obtained in this case is mainly due to the youth of the patient. Aneurisms of the arch of the aorta at his years are rare occurrences. The age over forty furnishes nearly all the cases, and arteries with atheromatous degeneration do not admit such a complete restitution of the normal type. I doubt very much if this operation should be recommended for persons of an advanced age with atheromatous degeneration. It would be better, after an ineffectual trial of simple electrolysis, if the symptoms are urgent, to perform simultaneous ligation after Brasdor. But something should be done in every case of aneurism of the arch of the aorta that does not yield to the Tufnell-Balfour treatment.

THE CORROSION METHOD IN THE STUDY OF THE ANATOMY OF THE EAR.[1]

By B. Alex. Randall, A.M., M.D.,
PROFESSOR OF OTOLOGY IN THE PHILADELPHIA POLYCLINIC, ETC.

The method of corroding away the tissues of an organ after filling its cavities with a congealing mass has been long and profitably employed in studying hollow structures, and most beautiful results have been thus obtained by many anatomists. Following the lead of Lieberkühn, Meckel, and others, Hyrtl made especial use of the procedure, and a fine series of his casts in wax, including some of the ear, is in the Mütter Museum. The ear, with its elaborate intricacy, is one of the organs in which the method can be most advantageously employed; and much has been done in this direction by Bezold, of Munich, whose valuable brochure upon the subject was published in 1882. Yet the method with wax was but a step in the advance to fine results; and the return to the use of fusible metal and the elaboration of the technique have furnished casts far more delicate, yet durable, than those before obtainable. Much

[1] Abstract of a paper read before the College of Physicians of Philadelphia, Nov. 5th.

credit for this advance, although a number of excellent casts made in metal by Dr. Goddard in 1831 may be seen in the Wister and Horner Museum, is due to Siebenmann, of Basle, who presented exquisite specimens of his work at the International Otological Congress in Brussels in 1888, and has since published an elaborate monograph upon the revelations thus made in the internal ear.

The writer was greatly impressed by the beauty of Siebenmann's specimens, and at once prepared to follow his example; but press of other work and lack of adequate material have long delayed the undertaking, and the preparations now presented form only a beginning of the series planned. It is hoped, however, that they will serve to bring the method into deserved notice, and that others will find how invaluable an aid it can be to them. Surely, in America, where perhaps fusible metal was first thus employed successfully, it ought to yield results second to none elsewhere obtained.

It is hardly necessary to point out that in this instance, contrary to what obtains in vascular preparations, the results gained are *negatives*, which represent the cavities, not the structures of the organ, and need for their full comprehension to be supplemented by preparations of the structures themselves. The important point is that they furnish tangible expressions of the details that are otherwise hardest to grasp; and as illustrating the value of such negatives, I can refer to the magnificent series of preparations by a similar but far more difficult and tedious method, with which Dr. Piersol captivated the Anatomical Congress in Wurzburg two years ago.

The essentials of the method are well known; but its minute details are noteworthy, since upon these refinements depends the perfection of modern results. The preliminaries vary with the organ to be moulded. If a macerated bone, such as the temporal, it is thoroughly dried and cleaned, is enclosed in linen so pasted on as to bridge the sulcus of the lateral sinus and other grooves, and to close all openings except the distal extremity of the carotid canal, into which a long paper funnel is glued. The whole is then imbedded in a large block of plaster, is thoroughly dried, and then warmed to about 200°. Wood's metal, a fusible alloy melting at 150° F., is melted upon a water-bath and poured in a full stream until the funnel is partly filled and the level ceases to sink. Quick cooling in water is followed by the removal of the plaster and linen envelopes, and the preparation is placed in a warm ten per cent. solution of caustic potash. Disintegration of the bone rapidly proceeds and will be largely accomplished in two weeks. The older procedure of picking away the remaining calcareous particles is too dangerous for the delicate portions of the cast, and is to be wholly avoided. The preparation is to be placed in a cold ten to fifteen per cent. solution of muriatic acid, which dissolves away the lime particles without injury to the metal beyond an occasional tarnishing. Superfluous metal

is then cut away, and the specimen mounted for preservation. For the soft tissues, injection by means of a syringe is sometimes necessary, since it is hard to raise the organ to the proper temperature for free flow without macerating its surface too much.

An exquisitely minute injection of the tissues can be obtained by these means, and the resulting casts, while very delicate, will bear careful handling without fracture or distortion, and are admirably adapted for demonstration purposes.

The practical results of such preparations can be valuable in the extreme, not only from an anatomical point of view, but in their bearing on practice, as two of those presented well show. No amount of reading as to the form and continuity of the upper air-passages can possibly

Fig. 1.

make as manifest their usual configuration and unity, as a cast obtained by pouring the metal into the trachea of the inverted head. The specimen (Fig. 1) is from a child of eight years, and falls far short of perfection; yet trachea, glottis, pharynx and nares are well shown, with clear indications of ventricles, fossæ of Rosenmüller, Eustachian tube-mouths, and other adnexa. Hardly any of the metal has found its way into the oral cavity, merely enough to outline the size and position of the uvula—showing how isolated the mouth really is from the air-passages. A more successful preparation of this sort, which should give as a single mass of metal the Eustachian tubes, tympana, and mastoid cells in their continuity with these upper air-passages, would teach a lesson in aural practice which many medical men have yet to learn. Still more instructive are the casts of the external auditory meatus, which are always viewed with scepticism at first, even by those having con-

siderable knowledge of the ear. The tortuous form natural to the canal as shown in some specimens (Fig. 2), can be largely done away by drawing the auricle up and back (Fig. 3); but the extreme obliquity of the drum-membrane and the widening of the inner third of the canal to form a pocket close beneath it, are anatomical facts too generally unknown. The cases are still numerous where grave injury is done by the surgeon in endeavoring to extract foreign bodies. Without illumination, ignorant of the anatomy, and armed only with improper instruments and a determination not to come out empty-handed, he will plunge in and force the foreign body, if present, through the drum-head; or, if there be no foreign body, will tear away the ossicles as such. Twenty ears have been seriously damaged, by efforts to remove a foreign body, to every one that has suffered from its undisturbed presence. The cast of the normal auditory canal cannot be withdrawn without damage to it or to the canal, as these specimens well illustrate; for thinking the

FIG. 2.

FIG. 3.

casting a failure, I tried to withdraw the readily-movable mass After many failures, my utmost strength dragged it out (that of the other side broke off in the canal), and the repeated casting gives evidence of much laceration from the violence used. Yet this is in the undeveloped meatus of a child; in the adult either bone or metal would have to break. As the forcible extraction of any other impacted mass is as difficult and dangerous, the often-neglected rule that the syringe is the only safe means for use in such cases receives another clear confirmation.

SOME IMPORTANT POINTS REGARDING THE APPENDIX VERMIFORMIS.

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DEMONSTRATOR OF ANATOMY, UNIVERSITY OF TORONTO, AND LECTURER ON NERVOUS DISEASES, UNIVERSITY OF TORONTO, SUMMER SESSION.

THE following observations have been made during the past eight years, and cover a total of two hundred dissections, carefully performed

for the purpose of elucidating certain points regarding this small and apparently unimportant bit of the human body.

The average length of the two hundred appendices was four and one-half inches; and the average diameter that of a No. 9 catheter, English scale. In three cases the appendices were only half an inch in length; while in only one case could it be said that it was entirely absent.

Of the entire two hundred examples, the appendix was supplied with a mesentery of its own, and so placed that its perforation would open directly into the peritoneal cavity, in one hundred and twenty-three. Of these one hundred and twenty-three, the appendix lay to the right of the cæcum in nineteen, descended downward in eleven, lay inward from the cæcum in eighteen, and behind the cæcum in the remaining seventy-five.

The other group of seventy-seven cases was specially interesting in the fact that the appendix was so placed and covered by peritoneum that its perforation would open into the subperitoneal tissue, and establish a diffuse form of cellulitis. In these cases the most likely course for the pus to pursue would be downward, and finally to present itself in the situation of a psoas abscess. One case is of great interest. A man of about forty, who had a discharging sinus in the above situation, died of an acute attack of pneumonia. A soft catheter could be passed up this sinus a distance of ten or eleven inches. On making a careful dissection of the sinus, it was traced to a perforated appendix, that lay behind the peritoneum in the position of the above seventy-seven. In reality this case was an example of a fæcal fistula.

Out of the two hundred cases examined there was evidence of old-standing lesions and perforations in seven. In three of these latter the proof, that at some prior date there had been a perforation, was quite positive.

Foreign bodies were found in fifteen of the two hundred. There were enteroliths in two; a small stone in one; a small bone in one; a piece of a screw nail in one, and such articles as orange-pips, cherry-stones, etc., in the other ten.

The above remarks are of some importance in showing that of the two hundred appendices, there were foreign bodies in fifteen; and that there were good signs of lesions in seven; three clearly having been of the character of a perforative appendicitis. This is very important, as pointing to the possibility of recovery after such a lesion of the appendix.

REVIEWS.

THE SCIENCE AND ART OF OBSTETRICS. By THEOPHILUS PARVIN, M.D., LL.D., Professor of Obstetrics and Diseases of Women and Children in Jefferson Medical College, and one of the Obstetricians to the Philadelphia Hospital. Second edition revised and enlarged. Illustrated by two hundred and thirty-nine woodcuts and a colored plate. Philadelphia: Lea Brothers & Co., 1890.

A SYSTEMATIC treatise on obstetrics, which, alongside of able and worthy competitors for favor, runs through one edition and is succeeded by an elaborate revision in less than three years, requires no comment as a successful book. One of the most characteristic things about the first edition of Dr. Parvin's work was the cordial reception and large sale it received in England. Of course, we have got above caring for such things now, except so far as it may prove that our English-speaking brethren on the other side know and can appreciate a good book.

This edition, as comparison with the former shows, is in many senses of the word a new book. It is largely rewritten, and while the general arrangement is preserved, and the author's opinions, like the convictions of a mature student, but little changed, yet in its new matter it is brought down rigidly to date. As the first edition received extended notice as a whole in these pages, it may serve the reader's purpose to notice the new matter and alterations that characterize this edition.

The chapter on Pelvic Anomalies is entirely new, that on Ectopic Gestation chiefly so. The method of delivering the head in head-last labors may be regarded as new. Among the portions in which careful revision is to be noticed are those relating to the Cæsarean and Porro's operations. Hicks's method of manipulative version is given in full with illustrations of great practical value. A good deal has been changed and much added on Puerperal Septicæmia. Puerperal eclampsia is new in the theory of its origin. In the practical technique of the parturient there are marks of new work as in removal of retained placenta, and retention after delivery.

As some of the new and revised matter relates to what in obstetrics may be regarded as burning questions of the day, it will be worth our time to notice what our author has to say. The one first worthy of extended notice is that on ectopic pregnancy. The opinion of the author that will startle some readers is that 1 in 500 of all pregnancies is the actual proportion of the ectopic form. The author stands alone among observers in this large ratio, although he has evidently been to considerable trouble in collecting his data. Concerning the still vexed question of location Dr. Parvin is among the most positive of au hors concerning the rarity of interstitial pregnancies, "as they are more fre-

quent in medical journals than they are in autopsies or in abdominal sections." The author is not an advocate of what he terms the "American method of treatment," that by electricity, and quotes the words of an expert abdominal sectionist, that electricity ought to be restricted to cases refusing abdominal section, or where no one could be found capable of doing the operation. "I think," says the author, "that this is the most that ought now to be said in favor of the treatment by electricity." This certainly excludes the United States, for it may well be doubted if there is any locality known to the author, or to his expert either, where one may not find a man ready to make an abdominal section. But we believe it safe to say that no author or book is yet known to man with authority sufficiently weighty to wipe electricity out as a means of treating a suspected case of ectopic pregnancy of the early weeks. Tait, with the thunders of a surgical pontiff, has tried in vain, with the added weight of the abdominal sectionists of two hemispheres. Herbert Spencer says, that when a belief shows this power of survival there exists about it certain elements of truth. The trouble is that the surgeon can afford to be positive while the electrician cannot, but what he lacks in the way of demonstration he more than makes up in the force of his self-conviction.

The illustrations in that portion that is mainly new in the head-last delivery are of a higher character, and aid the text in a most efficient way. In contrasting two methods of delivery, that of the Wigand-Martin-Winckel method (pressure upon the after-coming head from above) and that of the Veit-Smellie (manual extraction), the author states after Eisenhart that the number of children living and of children that continued to live is seven times greater by the former than the latter, a statement which, if correct, ought to settle the method for all time.

The chapter on Cæsarean Section and its substitutes is one of the rewritten sections. We fear the hardest task the author attempts in the book is to clear up the confused terms designating the various operations made through the abdominal wall. We all know that the prefix *laparo* does not, in its etymological sense, mean an incision in the middle line, yet it has been in common use since 1811 by Fieldler, "who took it upon himself," as Dr. Harris says, "to extend the word over the whole abdomen." The author applies the term *gastro-hysterotomy* to the Cæsarean section, and *gastro*-hysterectomy for amputation of the organ as in Porro's operation. Dr. Parvin, like many other writers, believes that the method of uterine suturing explains the modern success of the Cæsarean operation. When Sänger first made a resection of the edges of the uterine incision it appeared as though there was a radical departure from the old method and that the improvement in results was a natural outcome. But the technique has reverted back to the old form, and the results are as good, if not better. The present deep and superficial sutures are "the great merit of Sänger's improvement," as the author says: but are not Sänger's any more than they belong to this humble reviewer. Who first put in deep sutures and then closed any intervening gaps with superficial ones, no man knows, but he lived generations before Sänger was born, and before German surgeons had made the whole field of surgery a directory of proper names. To our mind "the great improvement in the Cæsarean operation, an improvement which has given the operation in recent years a marvellous success," is

not a mere matter of sutures, but because the operation is made by men skilled in gastrotomy and in clean surgery, and upon women not yet *in articulo mortis*. "If a choice of time can be made," says the author, "it is preferable to do the operation about the end of pregnancy, but before labor begins." What systematic author would have dared to write this even so recently as ten years ago? Yet this is what success has led to, and, also, this is what has led to success.

For this reason the operation of Porro, after the novelty had worn off, found itself replaced by its older rival, against which the charge could no longer be brought of a nearly total mortality. The Italian operation then found its natural field of usefulness. In the instances of a uterus damaged by traumatism, fibroma, or the complication of incoercible hæmorrhage, it largely serves to save life as an alternative in Cæsarean section. There does not appear any reason to doubt that Dr. Parvin has the mass of operators with him in this opinion of the two operations. The extreme dogma of Tait that Porro's operation "will revolutionize the obstetric art, and in two years we shall hear no more of craniotomy and evisceration," has produced no impression on the general mind, which, fortunately for humanity, is one of conservatism. The modification of Müller is the form the operation is done in, and, like the modern Cæsarean, the improvement is in the direction of simplicity.

Braxton Hicks's method in version is given with several well-executed cuts which give a very practical idea of the method. Compared with other recent works on obstetrics this section is the most complete of any, and for the first time in an American text-book this important manipulation is given the place it deserves. Considering the fact that Braxton Hicks's first article appeared thirty years ago, it was high time that it received the complete and practical illustration that it has in Dr. Parvin's second edition.

Puerperal septicæmia has been further elaborated, compared to the first edition, and a good deal changed in wording and arrangement.

The theory of eclampsia advanced by the author is new as to the theory of its origin, and appears capable of giving a reasonable explanation of the phenomenon. This theory is briefly expressed and is deserving of quotation: "The disease should be regarded as essentially a toxæmia, the poison resulting from a failure of one or more eliminating organs to exercise perfectly their function. By the light of this theory, possibly, we may see why in case of the death of the fœtus, if the eclamptic attacks occur in pregnancy, they cease, or if albuminuria has occurred it lessens or disappears. While the fœtus lived it was constantly throwing into the mother's blood materials which ought to be eliminated through her emunctories. But if the fœtus dies, this process no longer goes on, the mother has only to eliminate self-created poisons, and the organs concerned are adequate to this single work, though they failed when the double burden was cast upon them." As the albuminuric theory will not explain the condition even within the most ordinary experience, and the neurotic theory, although more difficult to reason down, also fails, the explanation of a toxæmia certainly makes clear some of the more obscure features of the disease.

It is not often in the notice of a second edition that so much can be said of the new matter that an author has laboriously added or re-written. The value of the work has certainly been increased, while its handy and compact form has in no way been impaired. E. v. DE W.

PROGRESSIVE EXERCISES IN PRACTICAL CHEMISTRY. By HENRY LEFFMANN, M.D., Ph.D., etc., and WILLIAM BEAM, M.A., etc. Philadelphia: P. Blakiston, Son & Co., 1890.

THIS little book is offered by its authors as a laboratory guide in inorganic chemistry, presumably for the use of medical students and in medical colleges. They state in the preface that "the usual method of laboratory instruction, consisting of practice in elementary qualitative analysis, does not seem to us adapted to the teaching of chemistry as contemplated in the curriculum of American medical colleges." To us their effort, offered here as an improvement or substitute, appears, however, entirely too elementary, and suitable only for teaching chemistry in high schools and general colleges.

It is to be hoped that, in the near future, elementary chemistry will be considered as a requisite feature of a student's store of knowledge on entering medical colleges, and that the *application of chemistry to medicine only* shall have to be taught to them, embracing the qualitative and quantitative analysis required by such a course.

We cannot fail, however, to praise the excellence of this little work for its practical, systematic, and lucid manner of arrangement, together with the many new experiments and apparatus added by its authors, notwithstanding that we are at variance with them as to its sphere of usefulness and the course of chemistry to be taught at medical schools.

L. W.

ESSENTIALS OF MINOR SURGERY, BANDAGING, AND VENEREAL DISEASES. By EDWARD MARTIN, A.M., M.D. Philadelphia: W. B. Saunders, 1890.

THIS compend is a good addenda to the same author's work on *Essentials of Surgery*. It gives the most frequently used bandages (illustrated), as made by the roller, handkerchief, plaster-of-Paris, and adhesive plasters; the more important knots and sutures (illustrated); the manner of using, and the proportions of the ordinary antiseptics. It gives good methods of preparing sponges, catgut, silk, dressing, and drainage, together with an excellent description of the proper preparations for an aseptic operation from its commencement to its termination. The portion devoted to the administration of anæsthetics is well illustrated and thoroughly practical. The uses and the methods of application of counter-irritants are explained, as well as the proper methods of hypodermic injections. The more important fracture-dressings are described with proper illustrations, as well as the most common luxations.

The portion devoted to venereal diseases comprises a short explanation of the technicalities, together with a statement of the methods of treatment of the three great divisions and their sequelæ.

With this outline the work is a great help to the busy student preparing for examination, and fully carries out its title. A. H.

PROGRESS

OF

MEDICAL SCIENCE.

THERAPEUTICS.

UNDER THE CHARGE OF

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Antisepsis of the Intestines.

Cantani writes that there are two therapeutical reasons for the disinfection of the intestines: first, to destroy the injurious microörganisms, and secondly to destroy the ptomaïnes already produced by them.

Except in very rare cases, the destruction of the pathogenetic micrococci in the living body will never be realized. All that is required at present is to produce an unfavorable soil for the growth of the micrococci, so that their rapid reproduction may be checked or diminished.

The destruction of the living disease-germs in the intestines may be accomplished per os or per anum. Antiseptics may only be given by the mouth when they are not changed or absorbed by the stomach or upper part of the small intestine, so that they reach the ileum unchanged, which is almost always the seat of the disorder.

For this purpose doses of calomel have been used, but set aside as unpractical except in infections of milder form. Bouchard has recommended large doses (*ad* 100 gm. daily) of finely-powdered carbon, naphthalin, finely-powdered iodoform (*ad* 1 gm. daily), and bismuthi salicylatis.

These substances, given in sufficient amount, can effect an antiseptic action on the fæces, but not, since they are insoluble, on the walls of the intestines. A marked action on the typhoid processes by these drugs has not yet been fully demonstrated.

Disinfecting fluids like carbolic acid and corrosive sublimate, given per os, can never produce complete disinfection of the intestines. Even overlooking their poisonous effect on the system, they will never carry out their antiseptic purpose, because a part is already absorbed by the stomach and the remainder loses its antiseptic qualities before reaching its destination.

The only way left is per anum, which is also the shortest way to the intes-

tines. This is the best way to apply antiseptic fluids which are intended to come in direct contact with disease-germs.

That the fluid injected is carried to the upper part of the duodenum is proved by injecting fluids which are not well borne by the stomach and which were vomited.

Since it has been proved that the injected fluid can be carried up to the higher loops of the intestine by means of a tube hanging from a reservoir two to four yards above the level of the patient, there can be no doubt of the advantages of this method of treatment.

Moreover, the injected fluid causes no irritation, which may be produced by every insoluble substance; besides there is no chemical or mechanical action on the stomach, neither are its functions disturbed. The fluid is brought into the intestines directly without being absorbed or changed at all.

In addition to the antiseptic action of these fluids we must not overlook others which are also valuable. By injecting a very cold fluid fever temperatures may be considerably lowered. In cases like cholera, accompanied by loss of heat, the temperature may be raised by injecting hot fluid, and vitality relatively restored. In this way the intestines are cleaned out and a large number of bacteria and ptomaïnes are ejected with the outflowing fluid. By this method the blood is diluted by absorption, which would not be possible to such a degree per os and thereby the excrements are eliminated with greater ease. The injected fluid thus becomes a true medium for washing out the entire system.

For antisepsis of the intestine all substances soluble in oil and water may be used, the same applies to astringent preparations, such as: Alum, salicylic preparations, thymol, aseptol, zincum sulphophenicum, boracic acid, hydrochloric acid, sulphite, and hyposulphite.

Cantani recommends gallic acid and carbolic acid Gallic acid has been successful in cases of intestinal catarrh with diarrhœa, also in true specific dysentery and typhoid fever. In cases of dysentery it may be desirable to add gum arabic to the acid or pure oil, on account of the painful condition of irritation. In the beginning of typhoid fever Cantani has prevented further development of the disease especially by using carbolic acid, 2 per cent. solution, with the addition of quinine hydrochloras.

In advanced stages of enteric enfeeblement, when the injected fluid will not rise, we are obliged to resort to the mouth as a means of reaching the duodenum, in which case naphthalin is to be preferred.—*Centralblatt f. d. gesammte Therapie*, Heft 9, 1890.

Therapeutic Action of Euphorine.

Euphorine is the name for phenylurethan given by Prof. Giacosa, of which the chemical formula is $CO \begin{matrix} OC_2H_5 \\ NH(C_6H_5) \end{matrix}$.

This combination is produced by the action of chlorocarbonic ether upon anilin. It is a white, crystalline powder, with slight aromatic odor and a taste at first hardly noticeable which afterward becomes sharper, resembling cloves.

According to Dr. L. Sansoni, euphorine is slightly soluble in cold water, very soluble in alcohol and in mixtures of water and alcohol, such as white

wine. Small doses of euphorine are well borne by men and the higher animals. A drachm and a quarter injected into the stomach of a rabbit produced death in five hours, the animal having collapse, gradually-diminishing temperature, increasing weakness, and anæsthesia.

Euphorine has been used in various diseases, and has proved itself to be a remarkable antithermic, antiseptic, antirheumatic, and, in some cases, an analgesic remedy.

1. Antithermic action:

Euphorine is indicated in certain acute and chronic febrile diseases, such as typhoid, croupous pneumonia, tuberculosis of the lungs, acute rheumatic fever, orchitis, influenza, exudative pleurisy.

The temperature falls rapidly after the administration of the drug from one-half to one hour. The action of the drug is maintained from five to seven hours.

Strictly speaking, collapse has never been observed, even in cases in which the temperature sank below normal; only a collapse-temperature was observed, which condition is common to all antipyretics.

The antithermic action is not always constant, the same dose having different actions in different individuals. It is advisable to begin with small doses to test the tolerance of the patient.

Generally, in febrile disorders, 15 to 20 grains p. d. may be taken without unpleasant results. 7½ grains uphorine are equivalent to 15 grains antipyrine. It is advisable never to begin with a larger dose than 1½ grains.

2. Antirheumatic action:

It has been tried in acute and chronic rheumatism. The single dose must be higher in chronic cases than when given to reduce the temperature; the daily dose is from 20 to 30 grains, better in large single doses than in repeated small doses.

In acute rheumatism one has observed the diminution of pain—the spontaneous as well as that produced by movement or pressure. The cases of chronic rheumatism with which he experimented were those which had resisted other specific remedies. After giving euphorine there was a slight diminution of pain and a little more freedom of motion.

3. Analgesic action:

It has been tried in tabes dorsalis, neuralgia, orchitis, hemicrania, as an analgesic, with varying success. The dose must be 20 to 30 grains, or more, during twenty-four hours.

4. Prof. Giacosa has proved its antiseptic power. He has used it with remarkable results dusted over indolent ulcers and in chronic ophthalmia. In a few days a wound is improved in appearance, the surface becomes red, pus disappears, and granulation proceeds rapidly. Such a sure and quick action, accompanied only by a slight temporary pain, is the chief advantage of this new remedy.—*Therapeutische Monatshefte*, Heft 9, 1890.

On the Treatment of Diarrhœa with Lactic Acid.

After continued experiments, Dr. Hayem has found that lactic acid is well borne by the alimentary canal.

After large doses it appears in rather a short time in the urine and fæces,

and thus proves that the acid given in a sufficiently large amount reaches the intestines unchanged and may act directly upon them.

Hayem has never observed digestive disturbances (flatulence, emesis, or diarrhœa) after daily doses of 2½ to 3¾ drachms.

He prescribes the remedy in the form of lemonade, as follows:

R.—Acidi lactici	10.0 to 15.0.
Aquæ destill.	800.0.
Syrup. simpl.	200.0.

Sig.—Take during twenty-four hours half a tumblerful between meals.

With this he had in almost all cases of diarrhœa excellent results. In tuberculosis accompanied by digestive disturbances he added daily one or two bottles of kefir (koumis). Also in diarrhœa of typhoid and in cholera nostras it proved successful. Otherwise lactic acid may be prescribed in cholera Asiatica. With reference to prophylaxis it may be given in doses of a drachm to a drachm and a half daily; otherwise, doses of 2½ to 5 drachms should be given, as early as possible, in twenty-four hours.—*Therapeutische Monatshefte*, Heft 9, 1890.

Tracheal Injections as a Way of Administering Remedies.

In view of the possibility of the advantages which the trachea may offer to the introduction of remedies for the treatment of respiratory diseases, it is worth while to note the report of M. Botey before the Académie des Sciences. The trachea is not popularly supposed to be willing to tolerate quietly the introduction of foreign liquids, but it has been shown that if the larynx be first anæsthetized with a ten-per-cent. cocaine solution, that, by means of a suitable syringe, water and solutions of various drugs may be introduced without exciting unpleasant symptoms. M. Botey injected two and a half drachms and, after eight days, about an ounce of distilled water into his own trachea without causing discomfort or coughing. His respirations were increased from seventeen to twenty-one, and his pulse from seventy-four to eighty-two. In a woman who had syphilis affecting the larynx and trachea, three drachms of a one-per-cent. solution of iodide of potassium were injected, and after a few days six drachms of this solution, containing also one-twenty-fifth of a grain of bichloride of mercury, were given in this way on every other day. These injections were repeated seventeen times successively. The treatment was well borne, and the patient made a good recovery. The only phenomena which were observed after these injections were a diminution in the number of respirations from twenty-three to eighteen per minute during several hours.—*Le Mercredi Médicale*, No. 30, 1890.

Salipyrin.

Salipyrin is a chemical compound of antipyrine 57.7 per cent. and salicylic acid 43.3 per cent.; it is a white crystalline powder, without odor, dissolves in alcohol, but only to the extent of one-half of one per cent. in water.

It goes without saying that it is another antipyretic, and may be used in amounts up to ninety grains, beginning with thirty grains and following this

at intervals of an hour each with fifteen grains. The temperature rises again after four or five hours, and is unaccompanied by a chill.

In acute rheumatism it has been found to reduce the pain and swelling, and it is of service, also, in chronic rheumatism.

Salipyrin is said not to have disagreeable accompaniments; ninety grains daily have been taken by some patients for one or two weeks. In one case there was an eruption, which disappeared in three or four days.

At present it is too expensive a remedy to be in much demand.—*Berliner klinische Wochenschrift*, No. 37, 1890.

Resorcin in Diphtheria.

Andeer has recently collected evidence in regard to the usefulness of resorcin as an antiseptic, and especially with reference to its employment in diphtheria.

Recent investigations have shown that this drug is a very active antiseptic, and harmless even in solutions containing ten per cent. of it. A ten-per-cent. solution in glycerin penetrates the tissues rapidly. At the St. Lazare Hospital it has proved serviceable in diphtheria.

It should be used every one or two hours, day and night, locally to the diseased spot. A spray of a five-per-cent. solution should be kept up in the patient's room, and, further, two to four teaspoonfuls of a two-per-cent. solution of resorcin in syr. terebinth. should be administered daily.

In diphtheria of the larynx resorcin is of little value.—*Centralblatt f. d. gesammte Therapie*, Heft 9, 1890.

Amylhydrate.

The dose of this liquid is about a drachm, but it is not very soluble in water. A small teaspoonful may be given in a glass of beer, or the following may be used:

℞.—Amylhydrate . . . . . ℥ij.
Aq. destill. } . . . . . āā ℥ij.
Aq. flor. aurant. }
Syr. cort. aurant. . . . . ℥j.—M.
Sig.—One-half at night.

—*Correspondenzblatt f. Schweizer Aerzte*, No. 18, 1890.

Treatment of Diphtheria.

To prevent the spread of the diphtheritic process, which may be better accomplished if we begin sufficiently early, local disinfection is the chief indication. With this end in view, Dr. Wolf, of Freiburg, has used the volatile oils, a class of remedies which he considers well adapted to this purpose, since Ziegler has shown that oil of peppermint, in the proportion of 1 to 300,000, prevents the growth of bacteria.

Menthol rubbed with sugar, in the proportion of 1 : 20 of sugar, or 1 : 10, may be applied by means of a brush to the site of the local inflammation, and is more efficacious in removing the membrane than menthol in solution.

The powder should be applied three or four times a day; on the second or at the latest on the third day the membrane disappears, and a clean, sharply-defined, depressed ulceration remains which heals rapidly under continued local use of the powder.

This treatment is not novel, but Dr. Wolf has employed it successfully for two years.—*Therapeutische Monatshefte*, Heft 9, 1890.

Iodine for Vomiting.

Iodine is useful to relieve the vomiting of pregnancy and also other forms of this distressing symptom, including that accompanying alcoholic gastritis. Ten drops of the tincture in four ounces of water, one-third of this after each meal, is the usual dose. It sometimes causes a pleasant sensation of warmth in the stomach which may last twenty or twenty-five minutes.—*Correspondenzblatt f. Schweizer Aerzte*, No. 18, 1890.

Solution of Iodoform in Olive Oil.

According to experiments made in Professor Binz's laboratory, olive oil will dissolve from two and one-half to three per cent. of iodoform.—*Therapeutische Monatshefte*, Heft 9, 1890.

Salt for Stings.

The pain and swelling following the stings of bees, wasps, and gnats may be relieved by rubbing-in salt moistened with water. The application should be repeated several times.—*Therapeutische Monatshefte*, Heft 9, 1890.

A Case of Acute Poisoning from Antipyrine.

The following case may serve well as a warning to practitioners who are in the habit of regarding antipyrine as a perfectly harmless remedy. A lady, twenty-two years old, took fifteen grains of antipyrine after her midday meal, and in about three minutes she complained of a peculiar pain in the back of the head. A few minutes later she had ringing in the ears and dizziness; this was followed by palpitation, dyspnœa, cold perspiration on the face, a sensation of warmth in the whole right side of the body and of cold in the whole of the left side. Disturbance of vision followed after about twenty minutes, and amaurosis, which continued half an hour and then slowly disappeared. Hyperæmia of the optic nerve and marked congestion of the conjunctiva were observed. There was cyanosis about the lips, the pulse was two hundred per minute, the respiration was rapid and labored, and speech was difficult.

After about an hour and a half there appeared, on the right side only, an exanthematous eruption; after a few hours there was severe vomiting.

The patient's condition improved gradually during the afternoon and evening, and no serious results followed.

She was given, apparently with good results, a grain and a half of caffeine every three hours.—*Centralblatt f. d. gesammte Therapie*, Heft 9, 1890.

Carbolized Oil Externally.

Dr. Tresilian has advised the use of carbolized oil in scabies (1 part carbolic acid to 15 parts olive oil). He asserts that it removes itching instantly without producing inflammation of the skin.

Even if it were possible to relieve the pain or to produce cure, Dr. Israel would still oppose its use on account of the possibility of general carbolic poisoning.

At the end of the year 1860, when the poisonous effects of this remedy were not sufficiently well known, it was much employed as an ointment in skin diseases. Different authorities reported cases of toxic symptoms, such as dizziness, dyspnœa, nausea, loss of consciousness, several minutes after its use; even death has occurred. The following cases will illustrate: Machin, in 1868, has reported two cases in which, after anointing the body with warm carbolic acid, death occurred in 2½ hours in a woman of sixty years, and in 60 hours in a girl twenty-one years old.

In recent times Lubrecht reported a case of a man, twenty-one years old, with scabies, who was rubbed with a solution of one ounce of carbolic acid in ten ounces of water. Five minutes after its use dizziness, pallor, and death occurred after two gasping respirations.

Finally, Koehler has seen death occur in a young man after previous symptoms of poisoning, for whom was prescribed the fifth part of a solution of 1 : 8. In the last case Hoppe-Seyler found carbolic acid in the blood. These cases are sufficient to show the rapid absorption and poisonous action of carbolic acid even in external applications. On this account one should avoid using carbolic acid in such a disease when there are other better and safer remedies in the field.—*Therapeutische Monatshefte*, Heft 9, 1890.

MEDICINE

UNDER THE CHARGE OF

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The Recognition of the Gonococcus.

Steinschneider (*Centralbl. f. d. med. Wissensch.*, 1890, No. 39, 710) maintains, in opposition to a statement of Fürbringer's, that the application of the Gram method of staining microörganisms is necessary to the satisfactory study of the gonococcus, inasmuch as the only positive characteristic of this coccus is that it is not stained by this method, while nearly all other diplococci found in the urethra are colored thereby.

These conclusions, which agree with those of Roux, are the result of the examination of eighty-six patients with acute and chronic gonorrhœa. The

almost entire certainty of this test is rendered absolute by the observation of the further characteristic of the gonococci, namely, that they are found within the pus-cell.

The Contagiousness of Lepra.

In the effort to throw further light on this subject, Wesener (*Centralbl. f. d. med. Wissensch.*, 1890, No. 39, 715) practised the introduction into the anterior chamber of the eyes of rabbits of small portions of leprous tissue, which had been kept for two and a half years in alcohol, and in which the bacilli were, beyond question, dead. An inflammatory reaction was brought about and the implanted piece entirely or partly absorbed. The bacilli, which retained their form and colorability, were taken up by cells, which did not remain only in the immediate neighborhood, but were even found in the region of the iris, ciliary body, and space of Fontana.

Since, now, the changes which take place on the introduction of living leprous tissue into the same locality are histologically and bacteriologically identical with those described as occurring after dead bacilli have been employed; and since the histological alterations are very similar to those seen after the introduction of finely-divided foreign bodies or dead tubercle bacilli, the author concludes that all experiments of this sort which have been claimed to prove the contagiousness of leprosy have been in reality of negative value.

Two Cases of Friedreich's Ataxia.

C. H. Brown (*Journ. Nerv. and Ment. Dis.*, 1890, No. 10) reports two cases of Friedreich's ataxia. In the first, a woman twenty-nine years of age at the time of reporting, there was a distinctly neurotic family history, though without direct inheritance or instance of the occurrence of the affection in her brothers or sisters. At the age of thirteen she had attacks of supposed malaria, and developed round shoulders and ungraceful movements and double lateral curvature. From the age of fifteen there were frequent attacks of headache, backache, and erratic pains in the extremities; the ungracefulness increased, falls became frequent, and ataxia rapidly developed. There had been profuse menstruation, flushings of the face, irregular action of the heart, polyuria, cold hands and feet, with chilblains in winter; attacks of pulsation in the groin and vulva.

Examination showed no mental derangement; ataxia of the lower extremities, rendering standing alone impossible; ataxia of the upper extremities and of the muscles of the face; ataxia of speech, rendering it slurring and rapid, with omission of labials. Tactile sense and temperature were good; weight-sense impaired; reflexes abolished. Ophthalmoscopic and electrical examinations negative; no evident paresis.

The second case, occurring in a woman aged twenty-eight years, has already been reported by Dana in 1887. When reëxamined in 1889 she was well nourished; could take a few steps when assisted. The limbs were not stiff; there were both ankle-clonus and tendon-reflex. The temperature-sense was good; the tactile sense a little affected; the muscle-sense poor, both in the

lower and upper extremities; in the latter no reflexes could be obtained, and there was marked muscular weakness. The speech was slow but not ataxic. The electrical and ophthalmoscopic examinations were negative. There was no spinal curvature. In the earlier and more active stage of the disease in the history of this patient there had been decidedly spastic symptoms.

The author gives a very interesting discussion of the symptoms observed, and of the views of different writers with regard to the nature and cause of the affection.

Contribution to the Study and History of Weil's Disease.

Weiss (*Centralbl. f. klin. Med.*, 1890, No. 38, 688) defines this disease as a suddenly-developing, acute, febrile affection, arising without discernible cause, accompanied by icterus, swelling of the liver and spleen, and renal and severe nervous symptoms, and running a short and favorable course. He reviews the cases which have been already reported, many of which he feels obliged to consider as not genuine examples of the disorder. He then reports a number of cases recently treated by him, as well as a large number of others which came under his observation in a small epidemic in 1866, and which he published under the title of "Infectious Icterus" before Weil's observations were made. As French authors also described it before Weil, he suggests that it be designated "*Typhus biliosus nostras.*"

The symptoms are of two classes—pathognomonic and accidental. To the first belong the sudden development of high fever, usually with chilliness or rigor; cerebral symptoms and muscular pains; disturbances of the digestive apparatus; icterus and swelling of the liver from biliary congestion; enlargement of the spleen; renal symptoms. To the second class belong cutaneous eruptions, as roseola, erythema, purpura, petechiæ, herpes labialis or nasalis, epistaxis, bronchitic symptoms.

Males are much more frequently affected, and usually between the ages of fifteen and thirty years. Most cases occur during the summer. The hygienic and sanitary conditions of places in which the disease has occurred have been recognized by all observers as bad. No positive case of direct transmission of the disease has as yet been observed.

As exciting causes there have been mentioned errors in diet, exposure to cold, over-exertion, ingestion of bad beer; but the true etiology of the disease has not yet been discovered, and the investigation of the blood for bacteria, carried out by some writers, has had but negative results. Though the affection has ended fatally, yet the prognosis is usually favorable. The recovery, however, is tedious. The severity depends upon the degree of the renal involvement.

The Amœba Coli in Dysentery.

Lafleur (*Johns-Hopkins Hosp. Bull.*, 1890, No. 7, 91) reports a case of dysentery in which the amœba coli were found in the stools. The patient, a man of twenty-seven years of age, a seaman, had been in the tropics for a short time in 1880, but not since. While at sea, two weeks before coming under observation, he had slight epistaxis, vomiting, and diarrhœa, and after a week numerous bloody stools, with tenesmus and abdominal pain. On

admission to the hospital his stools were greenish-brown, watery, fœtid, and contained blood, mucus, shreddy detritus, and scattered masses of pus. Numerous amœbæ were found actively moving in the stools. They varied considerably in size, the average being five to seven times that of a leucocyte. They were pale bluish-green in color, and contained one to many small vacuoles surrounded by highly-refracting granular particles, the whole being invested by a homogeneous outer zone looking like finely-ground glass. In some it was possible to make out a circular nucleus. Several stools were examined every day, and amœbæ always discovered. Small grayish-yellow pus collections, which could be easily picked out with the forceps from the fluid part of the stools, exhibited the organisms to the best advantage. This is the second case of dysentery reported in this country in which the amœbæ have been found.

The Value of the Phenylhydracin Test for Sugar.

Hirschl (*Centralbl. f. d. med. Wissensch.*, 1890, No. 38, 691), in investigating the value of this test for sugar in the urine, found that out of forty-five different specimens of urine only four exhibited the characteristic yellow needles of phenylglucosazone, with a melting-point of 205° C., and that in these four urines the fermentation-test also gave a positive result. The other urines gave only the yellowish-brown masses, strongly refractive globules, and irregular thorn-apple forms of a melting-point of about 150° C., while the fermentation-test was negative. He therefore considers the phenylhydracin test reliable for sugar in the urine. Ten c.cm. of the urine should be mixed with twice as much of the reagent as will lie upon the point of a knife and with three times this unit of acetate of soda. This mixture should then be heated at least an hour on a water-bath, allowed to stand over-night, and the sediment examined microscopically. Levulose gives, it is true, the same osazone as grape-sugar. If, therefore, a polariscopic examination of the urine shows no deviation of the light to the right, the presence of levulose in the urine may be assumed. The combination of phenylhydracin with lactose produces bright-yellow needles ten times as wide as phenylglucosazone, while maltose produces an osazone in the form of broad, yellow plates of a melting-point of 82° C.

The Causes and Treatment of Chronic Constipation.

Kogerer (*Wien. klin. Wochenschr.*, 1890, No. 33, 638) says that, though a person whose bowels are regular will have one or two, or, rarely, even three, passages daily, it is possible for an individual to suffer from chronic constipa- and yet to have the bowels moved as frequently as this. In these cases the passages are only the overflow, while the greatest portion of the fæcal mass remains in the large intestine. It is to be borne in mind that such persons may even suffer from chronic diarrhœa.

In discussing the numerous causes of constipation, the author mentions as one of the chief the voluntary neglect of the natural inclination to stool. Among other causes are an insufficient ingestion of fluid; the loss from the economy of large amounts of water, as in profuse sweating, etc.; an insufficient secretion of the digestive juices, especially bile; the ingestion of certain drugs;

diseases of the brain and cord; hysteria, hypochondriasis, melancholia, neurasthenia, etc.; the occurrence of severe diseases; chronic intestinal catarrh; venous congestion in diseases of the heart, lungs, and liver; atrophy of the muscle of the large intestine, either primary or as a result of general cachexia; sedentary occupation. In general it can be said that conditions of irritation in the intestinal canal are accompanied by diarrhœa, and conditions of paralysis exhibit constipation. The external sphincter offers an exception to this, since, when there is abnormal irritability here, it prevents the fæcal matter from passing, while if it is paralyzed incontinence of fæces is liable to result. A spasmodic condition of this sphincter may, as is well known, occur in case of fissure. It may also be seen in diseases of the spinal cord involving the centre for the emptying of the large intestine, and it is possible for a similar condition to be due to cerebral affections or general neuroses. The author reports a case in which spasm of the external sphincter, with resulting obstinate constipation, was due to hysteria.

The evil results which may follow chronic constipation are legion. It is important, therefore, that the affection receive fuller attention than it has done. The diagnosis is by no means always easy; and the author relates two interesting cases, in one of which an abdominal section was performed, while in the other the diagnosis of carcinoma was made—both of them proving to be instances of chronic constipation merely. A rational therapy consists in discovering the cause of the condition, where possible, and in fulfilling the *indicatio morbi* by rendering the atonic intestinal muscle again capable of action by increasing the strength of the accessory muscles, as those of the abdominal walls, and by removing any spasmodic condition of the sphincter. A symptomatic treatment is only to be employed when neither of these ends can be attained. Atony of the muscle of the intestine or of the abdominal walls should be treated by massage, exercise, electricity, and hydrotherapy. The electrical current can best be applied by placing the anode in the rectum or on the lumbar spine and the kathode on the abdominal walls, or both electrodes in the latter position. Hydrotherapy for this affection consists in the rubbing of the abdomen with cold water, the use of cold douches, short cold sitz-baths, wet abdominal bandaging, and cold injections. The diet should be carefully regulated, so as to increase the amount of fluid ingested. The use of laxative mineral waters is not to be recommended, since the benefit obtained from them is only temporary. Spasmodic conditions of the sphincter can best be treated by a "rectal cooler" (Artzberger's), which acts both mechanically and thermically.

Cardio-vascular Vertigo.

Grasset (*Memorabilien*, 1890, 9, 539, from *Sem. Méd.*) says that this form of vertigo, which he distinguishes from other forms under the name of cardio-vascular, commonly occurs associated with the symptoms of cerebral thrombosis. It is a symptom of temporary disturbance of the circulation in the vessels of the brain. It is commonly one of the first symptoms of commencing arterio-sclerosis. This form of vertigo is common, since that seen in gout and rheumatism, and as a result of chronic intoxication with tobacco, alcohol, etc, is nothing other than the vertigo of arterio-sclerosis.

The early appearance of the symptom is of great importance, since it permits of the employment of suitable prophylactic measures, directed against a development of arterio-sclerosis in the different viscera, which would result in softening in the brain, sclerosis of the cord, the characteristic involvement of the heart and kidneys, etc.

Cardio-vascular vertigo is generally a chronic affection, lasting for years with more or less well-marked exacerbations arising without evident cause.

At times it is associated with other transitory symptoms, such as hemiparesis, amnesia, fatigue, aphasia. As regards the differential diagnosis, it is to be borne in mind that in general the different varieties of vertigo exhibit no clinical difference. The diagnosis rests upon the nature of the concomitant symptoms. Thus the coexistence of dyspeptic disturbances points toward gastric vertigo; optic or auditory affections toward the corresponding variety of vertigo, while the diagnosis of cardio-vascular vertigo may be made, when besides the physical and functional symptoms, there exist a sensation of pressure, dyspnœa on exertion, palpitation, præcordial anxiety, circumscribed coldness of different parts of the body, headache, insomnia, atony of the radial and temporal vessels, etc. The most characteristic symptom is always the accentuation of the aortic second sound.

The treatment of cardio-vascular vertigo consists principally in diminishing the tension of the vessel-walls; and for this purpose iodide of sodium and nitro-glycerin are indicated. The first, in doses of 15 grains daily, must be continuously administered during months before discarded as useless. The second, in doses of 4 drops of a 1 per cent. solution twice daily, is very valuable for diminishing the blood-pressure. The two drugs may be given together, or the iodide may be administered during the first 20 days of the month, and the nitro-glycerin during the last 10. It is especially important, too, that a strict hygiene be prescribed. Above all, the employment is to be forbidden of all those things which favor the development of arterio-sclerosis, such as tobacco, alcohol, solid flesh, etc. The patient should practise bodily exercise, live much in the open air, and consume milk, tender flesh, and leguminous vegetables. If epileptiform attacks accompany the vertigo, bromide of soda also should be given in doses of two to three grains daily. In cases where there is loss of strength arsenite of sodium is of value.

Vertigo of Bulbar Origin.

Buzzard (*Lancet*, June 25, 1890) admits the existence of Ménière's disease, but thinks that it is the too common habit to attribute to an affection of the labyrinth all cases in which there is paroxysmal vertigo accompanied by deafness and ringing in the ears. The author's belief has long been that in perhaps the majority of these cases it is through the centre in the medulla oblongata that the nerve is affected, and not at its periphery. Of the ten cases published by Ménière, an autopsy was made in only one, and there are but very few other cases in which the diagnosis was confirmed by autopsy.

The author relates an interesting case of a physician, forty-three years of age, who was suddenly attacked on waking with giddiness without deafness or tinnitus. While the head was perfectly still he was free from the trouble, but with the slightest turn it came on again. After some weeks he recovered, but

was again after a time attacked with faintness, lasting a couple of hours and accompanied by profuse sweating, and a similar attack occurred on the next day. In these attacks he did not lose consciousness, but felt as if his heart was not acting, and was unable to lower the head to the right—as in looking up at something to the left above him—without giddiness, though he was able to move it rapidly from side to side, or to stoop down. Immediately after the attack he passed a large quantity of colorless urine.

The character of the vertigo in this case was distinctly auditory, the faintness was probably due to inhibition of the heart's action through the vagus, and the profuse sweating and large discharge of urine to irritation of centres in the medulla. Thus the legitimate inference seems to be that the nucleus of the vagus, the auditory nucleus, and the vaso-motor centre in the bulb, were all subject to some irritating influence.

There is reason to believe that irritation exerted in this region would produce just such disturbance of functions. Irritation applied to any part of the fifth nerve, even to the nucleus in the medulla, gives rise to pain, referred, according to the law of peripheral perception, to the periphery; and it is just as reasonable that irritation applied to the fibres or to the nucleus of the auditory nerve—a nerve of special sense—will give rise to perturbed action in the organs supplied by that nerve—vertigo if the part supplying the semicircular canals be affected; tinnitus, if the part going to the cochlear portion. It has been found, in fact, as regards another of the bulbar nerves, that in every case of tabes with gastric or laryngeal crises, and in which the medulla has been examined, there exists sclerosis in the neighborhood of the vagal nuclei.

Buzzard then reports several other interesting cases bearing upon the subject in question. In one of these, which appeared to have all the symptoms of Ménière's disease, the patient was nearly "stone-deaf" during the attacks. It is clear that this paroxysmal deafness could not be due to organic disease of the internal ear.

Cases of the kind described are very numerous. In such cases sometimes one nerve-centre and sometimes another seems to bear the brunt of the transient influence exerted upon the bulb. In some instances there are violent attacks of vertigo with auditory symptoms, while in others there may be an attack of irregularity of the heart's action, comparable in suddenness and violence with the vertigo, which it apparently replaces; or the sensory function of the fifth nerve may be attacked, and the patient suffer from paroxysmal neuralgia.

As regards the nature of the influence acting upon the bulb we are not yet in a position to speak with any positiveness. The fact that so many of the patients are clearly gouty offers some reason to think that it may be the presence in the blood of an uric-acid salt, or some equivalent, which is acting as the irritative agent.

It has long been the author's practice to prescribe salicylate of sodium in cases of vertigo associated with auditory nerve symptoms. He does this partly because the drug possesses an influence on the elimination of uric acid, and partly because it appears to exert some direct influence upon the centres in the medulla oblongata.

SURGERY.

UNDER THE CHARGE OF

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GUNSHOT WOUNDS OF THE CHEST AND WRIST.

G. S. THOMPSON (*The Lancet*, No. 13 of vol. ii., 1890, p. 661) reports a case of gunshot wound of the chest and wrist-joint, followed by complete recovery. The patient, a cavalry officer, was shot by a Martini-Henry carbine. One bullet entered the chest on the left side behind, at the level of the ninth rib below the angle of the scapula, and three inches from the spinal column. It traversed the chest and made its exit one inch below the left clavicle and three inches from the intraclavicular notch. Air bubbled from the anterior wound with a hissing sound during the movements of respiration. There were slight pain and difficulty of breathing. There was no hæmoptysis, wound emphysema, or internal hæmorrhage. The patient was at ease except for a sense of oppression and a slight pain behind the sternum during swallowing. The chest wounds were carefully examined by the finger for bleeding-points, damaged ribs, and foreign bodies. They were then washed out with an iodine solution and dressed antiseptically. The second bullet entered at the root of the thumb, between the radial artery and the median nerve, and external to the pisiform bone. It made exit half an inch external to the styloid process of the ulna and just over the wrist-joint. This wound was dressed in a similar way. The patient recovered with perfect use of the wrist.

The author remarks that none of the usual and what are commonly regarded as pathognomonic signs of wound of the lung were present in this case, except escape of air from the wound of exit and pain in the chest.

CYST OF THE PANCREAS.

TREVES (*The Lancet*, No. 13 of vol. ii., 1890, p. 655) reports a case of cyst of the pancreas which was cured by operation. The symptoms presented by the patient were indefinite in character. He was a vigorous, muscular man who had always been well until seven months before. He then noticed a throbbing sensation in the region of the umbilicus which was perceptible only when he lay upon the abdomen, and which ceased when he altered his position. A little later he noticed that he became tired sooner than usual, and had occasional dragging pains starting from the right testicle and spreading over the abdomen. He continued to work until five weeks before his admission to the hospital, when a tumor was discovered in the region of the

umbilicus for the first time. It was the size of two large fists, was rounded, and free from pulsation. When admitted to the hospital he was in the following condition: He had lost but little in weight; he had some nausea, but had never vomited; the bowels were regular, and the stools normal in appearance; there was no jaundice; the urine contained one-twelfth of albumin; there was neither hiccough nor disturbance of respiration; the tongue was clean. He appeared very weak and depressed, and exhibited the utmost lassitude. The eyes were sunken, and the expression was that of utter and hopeless melancholy. The complexion was of a dirty-brown color, not unlike fading sunburn; this color was limited to the face, and attracted immediate attention. The pupils were responsive to light, though they were contracted almost to pin-holes. He spoke like a man who is intensely drowsy. In the abdomen was a median tumor; its upper limit was three inches above the umbilicus and below it reached to the pubis; it occupied nearly the whole of the front of the abdomen. Before operation the idea of a cyst was never entertained; the mass appeared to be solid and heavy.

The abdomen was opened in the median line below the umbilicus. A greatly-distended cyst was immediately exposed; it was placed behind the peritoneum of the posterior parietes; the reflections of the peritoneum from the sides of the tumor onto the kidney and the meso-colon being noticed. The growth was in close contact with the spine as far as the fourth lumbar vertebra. The small intestines were, for the most part, below the tumor. The omentum, transverse colon, and stomach were above it. The tenseness of the cyst was remarkable; when punctured, a jet of fluid was projected with great violence. The cyst was freely opened, and the margins were attached to the parietal wound. A large drainage-tube was introduced in the cyst. Convalescence was easy. In three months the external wound was closed and the cyst obliterated. About one hundred ounces of fluid were contained in the cyst; it was thick, opaque, and of a brownish-red color; it was alkaline, contained many blood-corpuscles, some albumin, but no bile and no urea.

Treves thinks that Senn's statement that "a positive diagnosis of a cyst of the pancreas is impossible," must be modified, and that, with the knowledge we now possess, there is no reason why the condition should not, in all uncomplicated cases, be recognized.

Tait's Flap-splitting Operation for Incontinence of Fæces.

Hooper (*Australian Medical Journal*, vol. xii. No. 8, p. 353) reports a case of incontinence of fæces from injury to the sphincter ani, which was cured by Tait's operation on the perineum. The patient, a woman, had been operated on in 1883 for external hæmorrhoids. This operation was followed by a rectal abscess. In 1884 she was operated on for fistula. In 1885 she was cauterized about the anus on account of the intense pain which attended the daily evacuations. One month later she was etherized and free incisions were made about the perineum. From this time all her symptoms increased in severity; she had complete incontinence of fæces and a constant discharge of mucus and pus from the bowel.

Examination showed that the perineum was practically absent, being rep-

resented only by a thin muscular septum between the vagina and rectum. The external sphincter was useless. There were three sinuses about the anus. Tait's flap-splitting operation was resorted to to repair this mutilation, with a perfect result. As the writer says, this case furnished a crucial test of the value of Tait's operation.

Brain Surgery.

Walker (*Med. and Surg. Reporter*, vol. lxiii. No. 8, p. 213) reports eleven cases of brain surgery.

There were two cases of compound fracture of the skull in which fragments of bone were driven through the dura mater into the brain. Trephining was performed and the fragments of bone were removed, with recovery in both cases. There were three cases of fracture of the base of the skull accompanied by intracranial hæmorrhage. The indications for trephining were the pressure-symptoms. Two of these cases recovered. There was one case of intracranial hæmorrhage without fracture. Trephining was performed six days after the injury and five ounces of coagulated blood were removed from between the skull and dura mater. The patient recovered.

There were two cases which received no benefit from operation: one was a case of supposed ancient intracranial hæmorrhage and the other a case of epilepsy.

The lateral ventricles were tapped for effusion in one case. The method of operating was that proposed by Keen. The trephine was placed 1¼ inches behind the meatus and 1¼ inches above Reid's base-line; the puncture being made toward a point 2½ inches directly above the opposite meatus. A considerable quantity of serous fluid was removed in this way; the patient, however, died in seven hours. The reporter is of the opinion that death was due to compression from hæmorrhage, which was caused by the operation. No autopsy was made. There was one successful case of trephining for epilepsy, which followed traumatism four years previous to operation.

Finally, there was a fatal case of operation for brain tumor. The tumor was not discovered at the operation. The autopsy showed it to be a cyst which had its origin at the apex of the petrous portion of the temporal bone.

Cholecystotomy.

Hall (*Cincinnati Lancet-Clinic*, New Series, vol. xxv., No. 14, p. 405) reports a case of cholecystotomy for obstruction of the common duct by an impacted gall-stone. The operation was performed in the usual way: five stones being removed, four from the gall-bladder and one from the common duct. The gall-bladder was stitched to the abdominal incision. The fistula closed in twenty-one days, and remained closed for over a month; all symptoms of obstruction to the flow of bile having disappeared. Two months after the first operation the gall-bladder again became distended, and over a pint of bile was removed through a second incision. The patient continued to suffer with repeated attacks of obstruction, and died of exhaustion four months after the primary operation.

At the autopsy a stone was found in the common duct. The author thinks

that this stone was in the hepatic duct at the time of the operation, and subsequently passed into the common duct. A second operation was not performed, because, during life, it was supposed that the repeated attacks of obstruction were caused by a stricture of the duct, and not to obstruction by a stone.

Surgical Treatment of Deformities Due to Paralysis.

Adams (*The Lancet*, No. 13 of vol. ii., 1890, p. 653) discusses this subject in a lecture delivered at the National Hospital for the Paralyzed and Epileptic. He advises the use of massage and passive movements in the early stages of muscular contraction; in severe cases subcutaneous tenotomy. He points out the danger of making a large open wound when dividing the tendo-Achillis in cases accompanied by spasmodic rigidity. The assistant who has charge of the foot should be aware that in these cases the anterior muscles are sometimes thrown into violent spasmodic contraction as soon as the tendon is divided.

The general principles of treatment are:

1. Subcutaneous division of all the contracted tendons.
2. Gradual, rather than immediate, or rapid, mechanical extension.
3. Physiological means to promote the restoration of muscular power.
4. Mechanical supports adapted to the requirements of the case.

Cholecystotomy.

Three cases of cholecystotomy are reported in the *Australian Medical Journal*, vol. xii., No. 8, p. 359. The first case is reported by C. S. Ryan. The patient had had an attack of jaundice seven years before the operation, and since then had suffered with pain in the region of the gall-bladder. A distinct pear-shaped tumor could be felt in the region of the gall-bladder. Cholecystotomy was performed, and a large stone was found impacted in the common duct. The gall-bladder was stitched to the abdominal incision. The patient made an uninterrupted recovery. The reporter calls attention to the fact that Mr. Tait divides all cases of enlarged gall-bladder into two clinical divisions: first, those cases which are not accompanied by jaundice, when the obstruction is in the cystic duct; and secondly, those cases in which there is a multiple collection of stones, usually accompanied by jaundice. The case just reported belonged to the first class. The prognosis in the second class is naturally more grave, on account of the greater systemic disturbance caused by the jaundice, and also on account of the altered condition of the blood, which leads to hæmorrhage.

The second case is reported by W. Moore. The patient had suffered for seven years, dating his sickness from a fall from a buggy, the wheel of which passed over his body in the region of the liver. He had had several attacks of jaundice, during one of which the operation was performed. The gall-bladder was found to be much distended with fluid; the liquid contents were removed by the aspirator, and 170 small gall-stones of varying size and shape were removed by the finger and a lithotomy scoop. The gall-bladder was stitched to the abdominal incision. The patient died in two days of septic

peritonitis. The case was an unfavorable one for operation on account of the long duration of the illness, and the repeated attacks of jaundice.

The third case is reported by MR. BALLS-HEADLEY. The patient had suffered for seven months before operation with a tumor in the right hypochondrium, and dragging and aching pains. She had not had jaundice. Examination showed a fluctuating and freely-movable tumor in the region of the gall-bladder. The abdomen was opened and six ounces of dense bilious fluid were removed by a trocar. The opening in the gall-bladder was then enlarged, and the cavity was explored by the finger. The walls of the gall-bladder were stitched to the abdominal walls, and twenty-five gall-stones were removed with the finger and forceps. A remaining stone was felt high up, under the right ribs, impacted in the cystic duct. It was found impossible to remove this stone. The patient recovered without difficulty. The biliary fistula, however, remained opened, and eight months after operation it was still discharging about half an ounce of clear mucus a day, and the stone could be felt by a probe to be in the same place.

In the discussion which followed the reports of these cases the question was raised between cholecystectomy and cholecystotomy. Mr. Lawson Tait, from his own personal experience, is strongly in favor of cholecystotomy.

RESULTS OF THE TREATMENT OF HIP-JOINT DISEASE BY THOMAS'S SPLINT.

RIDLON (*New York Medical Journal*, vol. lii., No. 14) communicates the results of his observations upon 62 cases of hip disease treated by Thomas; these cases were seen during a twelve-days' stay at Liverpool, and represent rather a picture of Thomas's daily work than of the final results of treatment. Of the observed cases the average duration of limp before treatment was commenced was a little over ten months. Contrary to what is generally believed, it was found that the long splint—that is, the one extending from the lower angle of the scapula to the lower third of the leg—had not always been put on at the beginning of treatment, but that the short splint which does not lock the knee had been used instead. In some cases the short splint had been replaced later by a long splint, but in others its use had been continued throughout the entire course of treatment. Nearly all the patients were found walking around without the high shoe and crutches, and it was common to allow patients to walk before deformity had been overcome, and while muscular spasm and deformity, and sometimes pain, still persisted. Of the 58 patients who had been under treatment for a longer or shorter time 23 had at some period of their course, some before, but many after treatment had been commenced, suffered from abscesses. Of these, one had disappeared without opening, and another was undergoing rapid absorption. There were 27 cases which were either cured or were so well advanced in convalescence that it was not thought dangerous to test mobility thoroughly. Of these, 12 had no motion, 10 had slight motion, 2 had motion of 90 degrees, and 3 had normal motion. It is, of course, impossible to formulate conclusions after a short observation of comparatively few cases, but Ridlon states as his general impression that very many of the patients who have had the short splint applied before muscular spasm and pain had subsided and before

deformity was reduced, and who have been allowed to walk without a high shoe and crutches, present a moderate degree of adduction, absence of motion, and in a few cases slight flexion. On the other hand, patients who have worn the long splint until cured, who have remained in the horizontal position until all pain and muscular spasm subsided, who have then used the high shoe and crutches, and who have been carefully watched and nursed, have been cured without flexion and without deformity other than that due to bone erosion and arrested growth. Moreover, in these cases motion has been free, and, in some instances, even normal. Finally, those patients who have had no traction are found to be singularly free from the conditions which it is commonly believed are to be relieved only by long-continued traction.

Lateral Deviation of the Spine as Diagnostic of Pott's Disease.

On the basis of Bartow's observation as to the frequency with which lateral deviation of the spine is found in cases of dorsal and lumbar Pott's disease, Lovett (*The Boston Medical and Surgical Journal*, vol. cxxiii., No. 15) made careful observations upon some thirty cases of spinal caries. He finds that in untreated cases the presence of lateral deviation is universal. This deformity is least characteristic when the disease involves the cervical vertebræ; but in all other cases, if the patient be stripped and inspected from in front when standing as squarely as he can hold himself, it will be found that a perceptible degree of deviation of the spinal column is present. This is much more readily perceived in this way than when the back alone is inspected. The picture presented is not like that of rotary lateral curvature. There is a distinct leaning of the body toward one side or the other, rather than a sinuous distortion. This leaning is most frequently toward the right, and is of diagnostic value because it is one of the earliest symptoms of Pott's disease. In several cases it could be distinctly perceived when other symptoms were slight and ill-marked. Rotation was never very marked, being in no way comparable to that found in true scoliosis. When observed, it was often found not to follow the same rule as in scoliosis—that is, rotating backward on the side of the convexity of the curve. In a third of the cases the rotation was in the opposite direction. The lateral deviation was much more noticeable in the standing than in the lying position, and is probably due to reflex muscular spasm.

Muscle-transplantation.

The experimental research of Gluck (*Deutsch med. Woch.*, No. 17, 1890), which seems to show that comparatively large pieces of muscle could be transplanted and maintain their vitality and physiological functions, leads him to conclusions so entirely opposite to generally accepted histological and pathological teachings that Magnus (*Münch. med. Woch.*, No. 30, xxxvii. Jahrg.) conducted a series of test-experiments. As a result he finds that, after excision of a portion of muscle and repairing the defect by muscle taken from an animal of the same species, if the seat of operation remains sterile the transplanted fragment apparently retains its vitality and becomes physiologically active, since examination two months after operation shows no difference

microscopically or functionally between the transplanted tissue and its normal environment. If, however, the seat of operation is examined earlier, he finds that the transplanted muscle undergoes complete degeneration and absorption, the resultant defect being finally filled in by organization of muscular tissue originating and extending from the living surrounding muscle. When a great part of a muscle was removed and its place supplied by transplanted tissue, there resulted simply a fibrous cord, thus showing that though each muscle has undoubted regenerative power, such power is limited. It must follow, from this, that the wisdom of muscle-implantation with the idea of thus piecing-out defects caused by wounds or operations can be seriously questioned; though experiments would seem to show that such grafts may be useful when employed for the purpose of bridging defects in the continuity of muscles or tendons.

OTOLOGY.

UNDER THE CHARGE OF

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Bezold's Form of Mastoid Disease and Thrombosis of the Lateral Sinus.

Prof. S. Moos, of Heidelberg, reports four cases of this interesting and important disease (*Archives of Otology*, vol. xix. p. 161, April–July, 1890).

Bezold's form of mastoid disease is that in which the abscess opens in the digital fossa or *inner* surface of the mastoid process. The pus then accumulates beneath the cervical fasciæ, and large, painful, burrowing abscesses occur in the side of the neck (gravitative abscess). The diagnosis may be difficult in the early stages of the disease. "A hard, painful swelling in the retro-maxillary fossa, often devoid of redness, may be the only symptom at the commencement, the mastoid process being apparently unchanged, without any infiltration of the overlying integument, and even showing scarcely any sensitiveness to pressure, though usually this is elicited upon percussion. Elevation of temperature may be absent in the early stages or may be transient and insignificant." This form of mastoid disease occurs usually with acute or subacute inflammations in the middle ear, and Moos regards it as the most serious form.

In Moos's first two cases the sclerosed mastoid was chiselled away to the extent of one centimetre in diameter, and pus was found beneath the skin and fasciæ. The first case recovered from the aural malady, but died of pulmonary tuberculosis four months later, and the second case died some weeks after the operation of cerebellar abscess. There was severe vertigo, even when in the recumbent position, vomiting, and obstinate constipation.

No autopsy. The third case died from septicæmia. On account of the great difficulty in chiselling away the mastoid process, Moos then determined, in subsequent cases of Bezold's mastoid disease, simply to open the antrum, "hoping to meet the indications by the easier method."

Therefore, in a case of otitis media purulenta of the left side (probably recent), with swelling in the retro-maxillary fossa, and longitudinal narrowing of the external auditory canal as the only symptoms of mastoiditis, and in which pyæmia occurred before and after the operation, with symptoms of *thrombosis of the lateral sinus*, the operation with the chisel and mallet was performed on the mastoid in the usual way and the antrum laid open, by applying the chisel at the level of the *spina supra meatum*, and advancing downward and forward from above and behind to a depth of two centimetres, when pus was reached in the antrum. Irrigation with a sublimate solution was then kept up for a month, when the pyæmic symptoms disappeared. There were at one time symptoms of embolic pneumonia.

Moos maintains that, when thrombosis of the lateral sinus exists or is suspected, the mastoid process should be trephined, because, as thrombosis of the lateral sinus may be recovered from if the patient overcomes the consequences of the breaking-down of the thrombus, and as these consequences can be escaped the more readily if the cause is removed, therefore, operative interference in thrombosis of the lateral sinus would be likely to yield more favorable results than the treatment by cinchona and wine hitherto relied on. By such an operation on the mastoid the pyæmic focus is attacked and the number of cocci in the blood diminished to a quantity compatible with life, until they are all overcome by antiseptics.

Ruptures of the Membrana Tympani, with Especial Reference to their Forensic Importance.

Dr. Leopold Treitel, of Breslau, Germany, has contributed an article on this important topic in the *Archives of Otology*, April–July, 1890. He reports observations of eighteen cases, occurring between March, 1887, and April, 1888.

Among these eighteen cases there were but two of perforation of the membrana by direct injury. These two accidents happened from the insertion of hairpins in the ear. The other perforations were of the class known as indirect, as by blows on the ear, and various forms of concussion. The percentage of occurrence of traumatic perforations of the membrane is from one to two per cent. of all ear cases. In some instances a fracture of the skull, chiefly from above downward, is directly continued upon the membrana. In one case the perforation was caused by diving. "Boxing the ear" was the cause of the vast majority. In the legal consideration of these latter cases there are two points to be borne in mind: first, "whether in the absence of simulation the hearing has been injured permanently—for life or for a long period of time; and secondly, whether an ear so injured by a blow had been previously healthy."

The author doubts whether it is the diseased membrana tympani only which is ruptured by a box on the ear. It is not easy to judge of the state

of the membrana before the injury in any case. Ears which hear well will often show a membrana abnormal in appearance.

It is also believed by the author that the sound-perceiving portion of the ear can be simultaneously affected in most cases of rupture of the membrana tympani.

The rupture in the membrane generally heals in from three days to six weeks, according to the experience of Treitel. The cicatrix may remain visible for seven months, as in one of the cases reported, though this appears very exceptional. As a rule, no cicatrix remains visible.

In regard to treatment the author very justly says: "The chief rule is to do no harm. A trivial injury to the membrana tympani unskilfully treated may become the starting-point of a chronic middle-ear suppuration, with all its disagreeable consequences. The *best* treatment is simply to close the meatus with a wad of absorbent cotton, and to avoid all use of the syringe." And he might have added: avoid the use of anything in the ear thus injured. The author advises against forcing air through the Eustachian tubes after a traumatic rupture has occurred. If the ear is carefully stopped with cotton —antiseptic preferred—the patient may attend to his affairs if there is no other complication to forbid it.

OPHTHALMOLOGY.

UNDER THE CHARGE OF

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ISOLATED BILATERAL PTOSIS.

PROF. FUCHS, of Vienna, in an interesting paper bearing the above title has described a form of ptosis which he considers represents a different group from cases hitherto known. He met with five cases in all, two in his own practice and three from the practice of colleagues in Vienna. The five cases all occurred in women and are divided into two groups which in some respects differ from each other. In the first group, including three cases, the patients were beyond middle age. They had not at any time suffered from syphilis or any affection of the muscular or nervous system. The movements of the eyes were free in all directions and the pupils normal. In fact, the ptosis constituted the only demonstrable anomaly and the condition did not exist, or had not existed, in any relative, so that there was a complete absence of heredity. The ptosis had developed so slowly that the patients were unable to say when it had begun, but it had not existed in earlier life. Eventually it became so complete that no action of the levator was possible. This condition led to constant wrinkling of the forehead.

There was great thinning of the lids and retraction into the orbit owing to atrophy of the orbital tissues.

The other two cases differed in this way that in both some slight degree of ptosis had existed from birth, and had since developed more completely. In them there was also an hereditary tendency to ptosis which, however, was not very strong in either case. They constituted, therefore, as it were, a transition from the congenital to the acquired ptosis.

In discussing the probable nature of these cases of ptosis, Fuchs points out first, that there could be no question of a paresis of the sympathetic or of a trauma. They must either be due to paralysis of the nerve-fibres supplying the levators or to changes in the muscles themselves. It is certainly rare, though it may occur, that a true nerve paralysis is confined to the levators alone, but there are good reasons for not considering the group of cases described to be due to paralysis. First, because if peripheral there would not be ptosis alone.

Again it is difficult to imagine that they could be central as there is no known centre for the two levators and a bilateral nuclear paralysis confined to the levator nuclei, even supposing distinct nuclei to exist for their muscles, would be extremely unlikely.

On the other hand, it is well established that in cases of congenital ptosis there may be an absence or defective development of the muscles. Fuchs indeed considers his cases to be cases of *atrophy of the levators* for the following reasons: (1) On account of the very slow access of the ptosis, there being even after years some slight yet undoubted contractility of the muscle remaining before all power is lost. (2) Because of the co-existing atrophy of the other parts of the lid, and lastly because some cases are preceded by a slight congenital drooping.

A portion of muscle removed from one case during the performance of an operation for raising the lid (Pana's operation) provided an opportunity of making a microscopical examination; the result of this, however, did not admit of a conclusion as to whether the primary atrophy of the muscles was neuropathic or myopathic in its origin.—*Graefe's Archiv.* xxxvi. 1.

New Treatment of Sympathetic Ophthalmitis.

Dr. Abadie, of Paris, partly from theoretical considerations suggested by the now very generally accepted view that sympathetic ophthalmitis is micro-organismal in its nature, and partly owing to the success which he claims has attended the practice where it has been tried, recommends the following treatment in cases of threatened or actual sympathetic mischief. In the first place enucleation, formerly so freely resorted to, should, in his opinion, be reserved for very exceptional cases in which the injury to the eye has been so severe as to leave no possibility of any vision being restored. Even in cases of very serious injury, in which, notwithstanding the adoption of antiseptic precautions, a sympathetic ophthalmitis has resulted, Dr. Abadie, before proceeding to enucleation, recommends the use of the actual cautery applied freely to the wound, followed by the injection of one or two drops of a solution of corrosive sublimate (1 : 1000) into the eye. In this way he has succeeded frequently not only in checking the sympathetic inflammation, but in improving the state of the exciting eye as well.

Finally, in cases where, in spite of everything, *i, e.*, treatment without or by enucleation, the second eye continues to become disorganized, he recommends attempts at hastening the quieting of the process of inflammation by injecting the same solution into the eye before performing any operation. —*Annales d'Oculistique*, April, 1890.

Pupillary Changes Dependent upon Tubercular Disease of the Lungs.

Rampoldi has on several occasions since 1885 published cases of transitory or persistent mydriasis caused, as he believed, by irritation of the sympathetic in connection with pulmonary disease. Such cases have also been described by Comini, who found the mydriasis most frequent on the right side. In his latest communication Rampoldi refers to a case in which he has been able to demonstrate the causal connection by post-mortem examination. In that case there was double myosis, recognized as paralytic owing to the imperfect dilatation of the pupils under atropine. Both inferior cervical ganglia of the sympathetic nerve were found to be diseased. On the right side this was evident to the naked eye, on the left it was first apparent after hardening and microscopic examination.—*Annali di Ottalmologia*, xix. 2.

The Form and Size of the Intervaginal Space of the Optic Nerve in the Region of the Canalis Opticus.

Pfister (*Graefe's Archiv.*, xxxvi. 1) has recently investigated this point, which is of interest in connection with the relation between brain and eye diseases, and possibly, also, in connection with sympathetic ophthalmitis. The investigation was made under the guidance of Prof. Haab, of Zurich. The portion of the nerve lying in the optic canal was specially chosen, as not only has that portion received little attention, but the statements in regard to it are conflicting. As regards the method of examination: in the first place suitable portions were removed with the saw from specimens which had been left in Müller's fluid for two years. The decalcification, which lasted from two to five weeks, was then effected by means of lactic acid. The acid was afterward removed by forty-eight hours' treatment with running water, and the hardening finally completed in alcohol. The preparations were rendered transparent by being placed in warm aniline oil (40° C.) for six hours. They were then transferred to xylol at the same temperature, the xylol being frequently changed until it ceased to become brown. Finally, they were cut in paraffin and colored in various ways. The result of the examination of specimens treated in this manner was to show, that both in form and extent, the intervaginal space in the optic canal is subject to considerable individual differences. There is always, it appears, a considerable space between the dural and pial sheath. In some it extends right round the nerve, although there are always pretty strong fibrous tissue filaments passing between the two surfaces. In others, again, the two surfaces are at parts completely grown together. This is most frequently the case below in the neighborhood of the superior ophthalmic artery. The dural sheath is very strongly developed throughout and is specially so below.

Visual Disturbances due to Malaria.

Sulzer (*Klin. Monatsbl. f. Augen.*, July, 1890) has made an exhaustive study of the affections causing disturbances of vision which are more or less directly referable to malarial poisoning. He divides them into two categories. The first includes the cases connected with a malarial cachexy. The second embraces those characteristic of the acute febrile attacks. In the first are: Chronic optic neuritis, leading, the bad cases, to melanosis of the papilla; diffuse infiltration of the vitreous; hæmorrhagic extravasation in the peripheral portions of the retina (these, according to Poncet, are always met with in individuals dying from malarial cachexy); sudden and incurable blindness, due, probably, to cortical hæmorrhages or embolisms. In the second category are: 1. Periodic amblyopia without any ophthalmoscopic changes. The degree of the amblyopia is variable, but in some cases may amount to complete amaurosis lasting for several days, and yet followed by complete recovery on using quinine. 2. Venous hyperæmia of the papilla and retina. 3. Large hæmorrhages in the neighborhood of the papilla and macula.

Tenonitis following Influenza.

Fuchs (*Wien. klin. Wochenschrift*, 1890, 11) observed four cases of idiopathic tenonitis during the influenza epidemic. One reason for believing in the influenza as the direct cause of the inflammation was that three of the cases were met with within a fortnight, whilst Fuchs had only once previously come across a similar case. In two of the cases a more definite confirmation of the diagnosis was afforded by the discovery of pneumococci (Fränkel-Weichselbaum) in cultivations made from the secretion. One case went on to suppuration.

DISEASES OF THE LARYNX AND CONTIGUOUS STRUCTURES.

UNDER THE CHARGE OF

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Epithelial Sarcoma of the Nasal Passages Invading the Frontal Lobes of the Brain.

M. G. Durante reports (*Arch. de Lar. de Rhin.*, etc., June, 1890) an instructive case which exemplifies the necessity of caution and of precaution in attacking suspicious intra-nasal morbid growths.

A man, sixty years of age, came to Dr. Luc's clinic for what he supposed was a simple nasal polyp. The right passage was seen to be occluded by an immobile, fungous grayish mass, which bled readily. Apart from the inter-

ference with respiration, and slight debility in consequence of recurrent epistaxes, a tendency to cephalalgia and some tendency to being dazzled, the patient had appeared perfectly well, expressed himself freely, and presented no indication of intellectual trouble.

Recognizing a malignant tumor inoperable without external access, Dr. Luc sent the patient to the *Hôpital Laënnec*, where, in the view of the absence of cerebral symptoms, it was proposed to operate the next day. As the patient arose in the morning, he tottered over and fell dead. The autopsy, twenty-fours hours later, revealed at the base of the cranium a grayish, puriform, and malodorous grumous mass covering the entire space comprised between the anterior portion of the cribriform plate of the ethmoid bone and the wings of the sphenoid. The cribriform plate was perforated and destroyed on both sides; and so was the body of the sphenoid, the destruction being more complete on the right side than on the left. The bones were represented by a semi-liquid puriform clot, through which the canulated sound penetrated into a vast anfractuous cavity formed of the nasal fossæ and the ethmoidal, sphenoidal, and maxillary sinuses largely opened by destruction of their walls. From this orifice a portion of the tumor was removed as an irregularly-lobulated grayish neoplasm, almost completely softened and diffluent in some places, and of fleshy consistence in others, but readily reduced to grumous masses by digital pressure. The dura mater and pia mater of the anterior region of the base of the brain were destroyed. All that portion of the base of the brain comprising the inferior face of the two frontal lobes, the anterior perforated spaces, and the chiasm of the optic nerves, was bathed in this same puriform matter, and showed, after being washed with a jet of water, that it was invaded by the neoplasm. The right olfactory nerve was completely destroyed, and but a number of shreds of the left remained, imbedded in pus and false membranes. The chiasm also was covered and invaded by the false membranes, and softened to such an extent as to make it difficult to understand how sight had been preserved. The inferior portion of the first frontal convolution, the beak of the corpus callosum, and the gray layer of the optic nerves had disappeared; and in their stead was a cavity, the dimensions of a small egg, occupying the two frontal lobes. This cavity was filled with a gray-brownish, grumous, purulent liquid, of an infectious odor. The walls were covered with a corrugated grayish membrane with fine green punctations. The cavity was entirely within the frontal lobes, and was separated from the convexity by a thickness of cortical substance, varying from one centimetre to one centimetre and a half. Behind and below it was separated from the lateral ventricles by a very thin layer of nerve substance which broke through on opening the brain. The ventricles contained but a few drops of liquid, and their walls absolutely healthy, were not even injected. The optic layer and the striated bodies were healthy, and in fact there were no other morbid conditions in the brain.

The tumor, on microscopic examination a sarco-epithelioma, had destroyed the superior walls of the nasal cavities, and had progressively invaded the frontal lobes, where it had produced an abscess, possibly in consequence of the secondary penetration of septic elements, but more probably in consequence of softening and disintegration of its central portions.

Clinically, the observation is curious in view of the latence of cerebral symptoms, which were not suggestive of any invasion of the encephalon. It shows, too, once more, the prudence requisite in undertaking extirpation of nasal growths, for there was no serious contra-indication in this instance, and yet, in all probability, sudden death would have ensued during an operation.

It is interesting, too, as a fresh example of the tolerance of the brain, and particularly of the frontal lobes, to lesions which should apparently have determined death, or at least grave nervous symptoms long before they had reached the extent they had undergone.

In concluding, the remark is made that, as both frontal lobes were equally affected, there could be no assumption that the unknown functions of one side had been here supplemented by an intact homologous region of the other side.

A New Method of Nasal Irrigation.

Pins, of Vienna (*Mercredi Médical*, April 20, 1890; *Rev. de Lar.*, etc., August 15, 1890) uses a small Wolfe bottle, to the longer tube of which a mouthpiece is attached by rubber tubing, while a nozzle is similarly attached to the short tube. The patient blows the liquid into one of his nasal passages, and, as the forced expiration occludes the rhinopharynx, the liquid escapes by the other nostril.

Posterior Hypertrophies of the Turbinates.

Dr. Harrison Allen, of Philadelphia, in an excellent clinical article (*University Med. Mag.*, August, 1890), enforced by a number of briefly narrated cases in illustration, shows that direct surgical interference is by no means always necessary. When the anterior end of an inferior turbinate body is small and well located above the floor of the passage, he finds it much better to apply astringents or caustics to the free inferior border, which is apt to impinge upon the floor of the passage, or to operate with the view of increasing the diameters of the nasal passages by resecting the triangular cartilage and drilling away superfluous projections from the septum; plans which in his hands have been quite successful in reducing the bulk of the posterior masses.

He urges care to avoid mistaking for posterior hypertrophies a normal condition due to a congenital defect of the vomer, which he has termed *recedent*. Thus, when the vomer unites with the floor of the nose at the region of the maxillo-palatine suture, the posterior ends of the turbinals will approach each other, and even come into contact from absence of the septum which would have kept them apart, so that they appear to be protruding into the free space of the rhinopharynx.

Several instances are narrated in which treatment of concomitant pathological conditions succeeded in curing, or greatly relieving, catarrh and asthma without any topical treatment of the posterior hypertrophies; complete relief ensuing in some of the cases even without any diminution of bulk in the posterior hypertrophies. In other cases the posterior swellings diminished or disappeared.

Dr. Allen concludes that it is a good rule to suspend treatment of posterior hypertrophies until all other morbid conditions have been carefully corrected, when, indeed, it may be found, as in three of the instances cited, that they will not require treatment at all.

Empyema of the Sphenoidal Sinus.

Dr. Albert Ruault reports in detail (*Arch. de Lar., de Rhin.*, etc., June, 1890) an interesting case of empyema of the sphenoidal sinus apparently consecutive to rather rough manipulations in extracting nasal polyp with forceps. It was cured after trephining the sinus through the nasal passage, and prolonged antiseptic syringings. Four years later the patient came under observation with a slight empyema of the maxillary sinus, which was cured by extracting a molar tooth, penetrating the sinus, inserting a permanent canula, and antiseptic injections. This is claimed to have been the second case diagnosed, operated on, and cured; the first one having been by Schaeffer. Subsequently Heryng reported four successful cases in his own practice, and E. Berger has written on the subject, citing Ruault's case, which he had seen in the clinic, and cases communicated to him by Quénn, Trousseau, and Mours.

Ozæna.

In an historical and bacteriological research on the nature of ozæna (*Arch. de Lar., de Rhin.*, April, 1890), Dr. S. Marano, of Naples, reviews antecedent opinions and researches and then details the result of his own careful investigations and experiments of control. He finds constantly a special form of microbe, *rhinobacillus*, which is not encountered in any other form of nasal disease, nor, to the best of his knowledge, in any other disease. It is capsulated but is entirely distinct from other encapsulated microörganisms studied by many other observers. It diminishes in abundance proportionately with the institution and efficacy of antiseptic treatment. It is the same micrococcus as has been described by Loewenberg, whose failure to find it encapsulated must have been due to defective technique in preparation. Its etiology has not been determined. The article is accompanied with a copious bibliographic index and a number of illustrations from the microscope.

Hyperplasia of the Thymus Gland.

Drs. Kruse and Cohen report (*Deutsche med. Wochenschr.*, May 22, 1890) a case of sudden death of a boy two years of age, during tracheotomy for diphtheria, and due to hyperplasia of the thymus gland. The gland measured 71 mm. in length, 42 mm. in breadth, and up to 17 mm. in thickness. A tongue-shaped lobe, 25 mm. in length, reached above the upper end of the sternum nearly as far as the isthmus of the thyroid gland. The distance between the spine and the sternum measured only 21 mm. The gland compressed the trachea and both primary bronchi.

Menstrual Influence on Laryngeal Disease.

M. Bayer has reported (*Journ. de Méd. de Chir. et de Pharm.*, June 5, 1890) the case of a woman, twenty-three years of age, with tuberculosis of the right lung, in whose tuberculous larynx œdema of the arytenoid region took place at many menstrual periods. After an arrest of two years' duration, the condition recurred; so acutely at one period as to demand tracheotomy. Œdema recurred at the subsequent menstrual epoch, and in association with a bronchitis which terminated fatally.

DERMATOLOGY.

UNDER THE CHARGE OF

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PRURIGO INFANTUM; PSORIASIS-ECZEMA; PRIMARY PIGMENTED SARCOMA OF THE SKIN; XERODERMA PIGMENTOSUM; DERMATITIS HERPETIFORMIS.

Under the caption "Remarks on various diseases of the skin," STEPHEN MACKENZIE (*Brit. Med. Journ.*, January 4, 1890) calls attention to the above diseases in a brief and practical manner. "Prurigo infantum," of the author, is the affection described by many English writers as "lichen urticatus," which usually begins in early life, often persists, and disappears gradually as the child gets older. Mackenzie is of the opinion that where it persists it becomes what is known as Hebra's prurigo. In the majority of cases local treatment only is valuable, the usual antipruritic remedies being recommended.

A case partaking of the symptoms of both psoriasis and eczema is given, at one time resembling psoriasis, at another moist eczema, the condition being known as eczematous psoriasis. The ordinary treatment for psoriasis was not appropriate, the remedies useful in eczema proving more beneficial.

An example of primary pigmented sarcoma of the skin, occurring in a man aged forty-five, corresponding very definitely to Kaposi's type of the disease, is recorded. The disease shows preference for the hands and feet, and is characterized by firm or hard tumors, or fungating or ulcerating masses of a bluish color. It occurs chiefly in the laboring classes, especially in those subjected to fatigue and hardship. A few cases have recovered under the use of arsenic, especially when given subcutaneously.

Xeroderma pigmentosum, a rare disease, is characterized by pigmentary spots like freckles, mainly on the face, neck, forearms, and hands, beginning in early life, later atrophic spots and telangiectases appear, and eventually warts, excrescences, and fungating growths, which are epitheliomatous or papillomatous. No treatment has proved successful in arresting the process.

Two cases of dermatitis herpetiformis are recorded, both in men aged about forty. In one patient the disease was of a severe type, and had persisted for four years, showing the greatest variety of manifestations. Arsenic exercised the most influence, but fell short of curing the disease.

ON THE NATURE AND TREATMENT OF ECZEMA.

UNNA believes (*British Journal of Dermatology*, August, 1890) in the specific nature of eczema, the essential cause of which is the inoculation of a germ. This germ is doubtless of vegetable nature, and increases and pro-

liferates in the epidermic structures only, requiring probably a condition of the skin suitable for its reception and development. All predisposing factors —"pre-existing improvements of the nutrient base"—hitherto so called, bear upon the disease only in so far as they bring about changes in the skin favorable to the germ-proliferation. External agencies—the so-named exciting factors—are to be looked upon as "accidental improvements of the nutrient base." In accordance with these ideas Unna defines eczema as "a chronic parasitic catarrh of the skin, with desquamation, itching, and the disposition to respond to irritation by exudation, and well-marked inflammation."

The author states that the local treatment should, therefore, always have in view the destruction of every single germ in the depths of the epidermis.

Elfctrolysis in the Treatment of Lupus Vulgaris.

Jackson has employed electrolysis, somewhat after the method of Gärtner and Lustgarten, in six cases of lupus vulgaris (*Journal of Cutaneous and Genito-urinary Diseases*, November, 1890). The effect while slow was favorable, and in a few instances practically curative. All the cases were of the non-ulcerative type. A metallic electrode of zinc, half an inch in diameter, attached to the negative pole, is placed upon the patch, and the positive electrode (a sponge electrode) is placed indifferently. The strength of current was about seven milliampères, and it was passed for seven or eight minutes. A crust forms, which falls off in a week or so. An application is made once weekly. After a time the disease has so far disappeared that but a few isolated nodules remain. The needle is now substituted for the metallic plate, using a current of about three milliampères. The main objection to this method, the writer states, is that it is slow, otherwise it has many advantages.

Notes on Pilocarpine in Dermatology.

Klotz gives (*Journal of Cutaneous and Genito-urinary Diseases*, November, 1890) a succinct *résumé* of the literature of pilocarpine bearing upon its employment in cutaneous disease. According to the investigations of such observers as Simon, Pick, Piffard, and others, this remedy has a positive value in such diseases as prurigo, dermatitis exfoliativa, hyperidrosis pedum, pruritus, ichthyosis, etc. Klotz reports favorable results in two cases of pruritus senilis, from doses of one-eighth to one-twelfth of a grain, t. d., the quantity being gradually reduced. The notes of three cases of eczema, of the papular and squamous type, are also given, showing good effects from the administration of this drug. The author believes that in the light of more recent theories (Unna) of the physiology of the secretion of sweat, the use of pilocarpine in pachydermatous and xerodermatous conditions of the skin has a rational foundation, but as recommended by Pick, it should be given in small doses and be long continued.

The Use of Thiol in Skin Diseases.

Schwimmer reports (*Wiener klinische Wochenschrift*, No. 18, 1890) favorable results from the external use of thiol in herpes zoster, dermatitis her-

petiformis, erythema multiforme, papular eczema, etc. Reference is made to an unusually rebellious case of dermatitis herpetiformis, which responded rapidly to applications of a lotion of thiol (1 : 3); the lotion was painted over the affected parts twice daily for several days, and then the skin washed with water. The vesicles and bullæ disappeared, leaving slight pigmentation. Powdered thiol (thiolum siccum pulverisatum) seemed preferable in erythema multiforme, whereas in papular eczema the wash was more cleanly and satisfactory. The remedy has the great advantage of absence of disagreeable odor.

OBSTETRICS.

UNDER THE CHARGE OF

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The Pathology of Tubal Pregnancy in its Early Months.

Orthman (*Zeitschrift für Geburtshülfe und Gynäkologie*, Band xx. Heft 1) concludes from the study of ten cases of tubal pregnancy operated upon between the first and second months, that a firmly-organized clot found upon laparotomy in an oviduct is very strong presumptive evidence of the occurrence of tubal gestation. An intra-peritoneal hæmatocele with tubal pregnancy results from rupture of the sac of the embryo, or through an abortion of an ovum situated at the abdominal opening of the tube. The recognition of decidual cells is not absolutely necessary for the diagnosis of a tubal pregnancy. Villi of the chorion can be recognized in all cases of tubal pregnancy during the early months.

Pernicious Vomiting in Pregnancy.

Flaischlen (*Ibid.*) reports five cases of pernicious vomiting in pregnancy, of which three perished. In two cases, induced abortion resulted in prompt relief to the patient, while two of the fatal cases were lost in spite of this resource. Flaischlen believes that, as a rule, the uterus is emptied much too late in these cases. He regards a very rapid pulse as the most important indication of danger, and would base his decision regarding the necessity for interference largely upon this symptom.

The Influence of Methods of Examination and Conduction of Labor upon Puerperal Mortality.

Leopold and Pantzer (*Archiv für Gynäkologie*, Band xxxviii. Heft 2) have studied the problem of the relation of puerperal mortality with methods of conducting labor and making examinations. It was found that many

cases of infection arising after normal labor were occasioned by neglect of antiseptic precautions after labor. It was not sufficient that strenuous care be exercised during delivery, but every precaution must be taken to keep the patient clean during her lying-in period. It was found, however, that the best results were obtained by omitting all injections of antiseptic substances, and confining the attention to the most strenuous external cleanliness and antisepsis. It was also observed that in proportion as internal examinations were omitted, that mortality and morbidity diminished. It was seldom necessary in normal cases to make any further examination than such as can be made by palpation and auscultation at the commencemen of labor and a systematic observation of the behavior of the uterus during labor. The drift of these studies is distinctly in the line of non-interference and restriction of examinations to palpation and auscultation.

Menstruation and Pregnancy after the Removal of Both Ovaries.

Robertson (*Ibid.*) reports a case in which both ovaries were removed for the relief of chronic pain and disability. Three months after the operation the patient menstruated normally, subsequently married, and was delivered of a large male child about eighteen months after the ovaries had been removed. (The most rational explanation of this case is that a portion of the ovarian stroma was left behind by the surgeon at his operation.)

Repeated Tubal Gestation; Operation; Recovery.

Herman (*Ibid.*) reports the case of a patient from whom he had removed the right tube for ruptured tubal gestation, who came under his observation with a similar condition upon the left side of the uterus. When exposed, the tube was seen as a purplish-red ovoidal swelling at the side of the uterus, its long axis parallel with that of the uterus, and connected with it by soft adhesions. It was removed without subsequent drainage. The patient's recovery was complicated by nausea and vomiting, which took place after her first operation. She made a perfect recovery in a month after operation.

Modern Methods of Treating Lingering Labor.

A discussion before the British Medical Association will be found reported in the *British Medical Journal*, No. 1552, 1890, upon this subject. Playfair prefers chloral in doses of fifteen grains repeated in twenty minutes to allay the pains of the first stage of labor. A third dose is rarely required, and the drug may be given by enema if the stomach be irritable. When uterine contractions are deficient, quinine is often of service during the first stage. It is occasionally justifiable to separate the membranes, should they be attached round the internal os, by the introduction of the finger. When the anterior lip of the cervix is prolapsed and impacted between the head and the pubes, it is well to push it up between the pains by the finger. For delay in the second stage of labor, expression of the fœtus by pressure upon the uterus is often justifiable. The physician should stand beside the patient, who is placed upon her left side, and with his left hand upon the fundus of the uterus he

should press strongly downward in the axis of the brim. The use of the forceps is often avoided by this manœuvre. Regarding the use of the forceps, the attitude of the practitioner should be one of constant watchfulness as labor progresses. When it is evident that the mother's powers are exhausted, delay should instantly cease, and the use of instruments be chosen.

In discussion upon this subject, the general drift of opinion was that during the first stage of labor the hot vaginal douche, the use of a narcotic to remove the inhibitory action of pain, and such assistance as change of posture would afford were all considered advisable. During the second stage, the cautious use of instruments was urged.

The Prognosis of Labor and the Puerperal Condition in Old Primiparæ under Antiseptic Precautions.

Erdmann (*Archiv für Gynäkologie*, Band xxxix. Heft 1) concludes from an extensive study of labor in old primiparæ that there is no definite limit, so far as age goes, by which to determine that a patient is, or is not, to be considered as an old primipara. It depends upon individual characteristics and not upon any especial age in month or years. At twenty-seven, the characteristics which are of practical importance in these cases are already present. The number of illegitimate births bears no relation to the age of the mother.

In the case of old primiparæ it is found that menstruation is usually deranged, producing a condition of anæmia and constitutional weakness. Such patients have, therefore, as a rule, a weaker constitution than young primiparæ. Contracted pelves are more frequent in these cases. Œdema and pernicious vomiting are not especially frequent. Eclampsia increases in frequency with a patient's age. Abnormal presentations and positions are also more common, especially breech presentations. The duration of labor increases in these patients, and inefficient labor-pains are common. Obstetric operations are more frequent and bear a close relation to the size of the pelvis, the rigidity of the soft parts, and the vigor of the pains. The mortality of the mothers in labor, when old primiparæ, has been reduced by the introduction of antiseptics to the usual rate. The procedure of incising the cervix and the walls of the birth-canal has resulted in lowering the mortality among children in these cases.

Thirty-six per cent. of all abortions in primiparæ are caused by syphilis, and 23 per cent. of all children perishing after the age of viability also die from syphilis. Uterine involution is slower in proportion with the patient's age. Febrile affections during the puerperal period are not more frequent with these patients than with others, a result obtained by the use of antiseptic precautions in labor.

The Transmission of the Bacilli of Typhoid from Mother to Fœtus.

Giglio (*Centralblatt für Gynäkologie*, No. 46, 1890) contributes an interesting and thorough report of the examination of a fœtus and appendages in a case of typhoid fever occurring at Palermo. The expulsion of the fœtus occurred forty-six days after the beginning of the fever. The fœtus and placenta seemed absolutely normal. Upon macroscopic examination, no

pathological condition was discovered; microscopic examination of the blood was also negative. Bacterial culture of the maternal blood resulted in the production of a bacillus, cultures of which bore the marks of those of typhoid fever. When these cultures were compared with those made directly from typhoid material, it was found that both germinated after twenty-four hours, and that after four days points of difference in minute particulars could be detected, although the general resemblance was striking. Cultures made from the milk showed the presence of bacteria exactly resembling those obtained from a typhoid case not complicated by pregnancy. Upon potato, comparative culture-tests established the identity of the case in question with typhoid. A bacteriological examination of the fœtus and its appendages resulted in identifying bacilli found in the fœtus with the bacilli described by Eberth as indicating typhoid. The case is especially interesting from the thorough manner in which it has been studied, and the positive results obtained.

The Indications for the Induction of Labor.

At the recent International Congress Parvin (*Archiv für Gynäkologie*, Band xxxix. Heft 1) describes the indications for the induction of labor as, first, incoercible vomiting. In ten cases which he has collected which were so treated, in eight the mother recovered, and five living children were born. The mortality-rate was inconsiderable.

Other indications for the induction of labor were, diseases of the kidneys, heart disease, capillary bronchitis, pneumonia, œdema, and phthisis. In ten cases of phthisis, in six the mother recovered. In affections of the nervous system, namely, eclampsia, and meningitis, six cases out of nine recovered after the induction of labor. The most frequent indication, however, was abnormality of the pelvis; out of 988 cases of induction of labor, 870 were performed for this cause.

The Operative Treatment of Eclampsia.

Halbertsma (*Ibid.*) has collected ten cases of eclampsia treated by Cæsarean section. Two of these cases perished, or 20 per cent. The average mortality, under treatment by narcotics and warm baths, in twenty cases, was 17 per cent. for the mothers and 77 for the children. Halbertsma urges in cases of eclampsia occurring at term, treatment by baths and narcotics until labor can go on. In cases where labor begins but is delayed, he would incise the cervix deeply, and deliver the patient. In severe cases, where some time must elapse before labor can occur, he would perform the Cæsarean operation. He would not allow a patient to perish undelivered.

The Prognosis of Pregnancy Complicated by Tumors.

Gordes (*Centralblatt für Gynäkologie*, No. 45, 1890) gives an interesting account of sixteen cases of pregnancy complicated by abdominal tumors. In four, abortion followed, and removal by surgical treatment. In four, pregnancy was ended by amputation of the uterus, and once by Cæsarean section. Out of sixteen cases, four perished.

GYNECOLOGY.

UNDER THE CHARGE OF

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Etiology and Pathology of Fibro-myoma.

Engström (*Med. Anzeiger zur Centralblatt für Gyn.*, Aug. 1890) calls attention to the fact that heredity seems to play some part in the etiology of fibrous growths of the uterus (as shown by an analysis of the histories of several families in which he had observed that two or more sisters suffered from them), as had been previously pointed out by Winckel, Carl Braun, and Gusserow—a fact which seemed to prove Cohnheim's theory of their embryonal development.

Boisleux (*Ibid.*) examined ten specimens of fibroid uteri removed *in toto* by Martin, with special reference to the detection of microörganisms in the cervical endometrium. Sections were made through that portion of the cervix which usually forms the stump after supra-vaginal amputation. In four cases he found micrococci which produced rich cultures on gelatine plates, and caused death in mice and guinea-pigs which were inoculated with them.

The Treatment of Ovarian Cysts by Faradism.

Noeggerath (*Ibid.*) reports six cases which were treated in this way from six to eight weeks, the tumor diminishing visibly in every instance and even disappearing entirely after a longer interval had elapsed. Proliferous multilocular cysts of moderate size are best suited for this treatment. The negative pole of the secondary current is introduced into the vagina (a sponge electrode being used), while the positive pole is attached to a large sponge electrode, which is placed on the abdomen. A current is used which is barely felt by the patient. Three *séances*, of half an hour each, are held weekly.

Vuillet's Method of Dilating the Uterus.

Vuillet (*Ibid.*) claims the following advantages for his method: Dilatation may be carried so far that the interior of the uterus may be inspected, and it may be maintained as long as desired. Perfect drainage is secured, the endometrium is rendered directly accessible to local treatment, and morbid growths are more readily removed through the dilated cervix, while intra-uterine hæmorrhage is most effectively treated by tamponing the cavity after previous dilatation.

Extirpation of the Bladder in the Female.

Pawlik (*Ibid.*) reports the following interesting case: The patient applied to his clinic on account of persistent hæmaturia. By catheterizing both ureters hæmorrhage from the kidney was excluded. Digital exploration of the bladder revealed the presence of a polypus the size of an almond, which

was removed per vaginam through an incision, its base being thoroughly cauterized. The patient was discharged cured. A year later she returned, extremely anæmic, stating that after enjoying good health for eight months the hæmaturia returned and had never ceased. Through the endoscope a diffuse papillomatous growth was seen, portions of which were removed for microscopical examination and proved to be malignant. The writer determined to extirpate the entire bladder, after turning the ureters into the vagina, in order to form a new bladder from the latter and the remains of the urethra. The preliminary operation was performed by inserting metallic catheters into both ureters (the patient being in the knee-elbow posture), incising the vagina opposite to the terminal extremity of each ureter, dissecting out the duct, and then ligating and dividing it two-fifths of an inch from its opening into the bladder. The cut end of each ureter was then stitched into the corresponding vaginal wound after removing the catheter; after healing had occurred there were thus formed two uretero-vaginal fistulæ. Three weeks later the radical operation was performed. An incision was made as for suprapubic lithotomy, the peritoneum was dissected from the bladder, and the latter was separated from its attachments as low down as the urethral opening, the organ having been previously distended with an iodoform emulsion in order to render it more prominent. At this stage the bladder was emptied and the cavity already made was packed with iodoform gauze on account of the oozing. The anterior vaginal wall was now incised just above the most prominent part of the urethro-vaginal septum, the bladder was drawn down through the wound and was cut away at the vesical orifice of the urethra. Here the patient collapsed, but was revived by the subcutaneous injection of ten ounces of warm salt solution, and the operation proceeded. The anterior vaginal wall was sutured to the anterior border of the urethral wound, the posterior border being united to a freshened surface at the entrance of the vagina in such a way as to produce a kolpokleisis. Before the sutures were tied elastic catheters were introduced into the urethra and carried into the ureters. The abdominal wound was closed, except at its lower end, through which were carried the ends of the gauze for drainage. The patient made a good recovery, but a fistula remained which communicated with the cavity that had formerly been occupied by the bladder, which did not heal for eight months. A second unsuccessful attempt at kolpokleisis was made ten months after the primary operation. This was repeated a month later, the anterior and posterior walls being united transversely; a minute fistula remained behind the urethra, through which urine escaped only when the patient was in an erect posture. She was able to retain control of her artificial bladder until twelve ounces of urine had accumulated, when she could empty it by contracting the perineal muscles. The woman made a perfect recovery and was able to undertake a journey from Prague to Berlin and to spend several days in sight-seeing.

[This remarkable case is certainly a triumph of plastic gynecological surgery, before which others sink into insignificance. The practical application of Professor Pawlik's long and patient experiments in catheterization of the ureters proves that this manœuvre is something more than a scientific pastime. The boldness of the conception and the untiring patience of the operator awaken our highest admiration.—ED.]

Iritis Catamenialis.

Trousseau (*Archives de Tocologie*, No. 6, 1890) reports the following case: A patient, æt. thirty-five, had menstruated normally until three years before, when she was attacked with iritis in the left eye, which developed two or three days before a monthly period and disappeared with the cessation of the flow. There was no suspicion of syphilis. An oculist diagnosticated irido-choroiditis with hypopyon, and, learning that she previously had rheumatism, prescribed salicylate of sodium. From this time on the patient had a return of the trouble at every period, sometimes a day or two preceding, but usually immediately before the flow—on two occasions *after* it. When examined by the writer the left eye was injected, the iris slightly clouded, and the vitreous turbid, containing small flocculi. The lower fifth of the anterior chamber was filled with pus, which disappeared with slight movements of the head. There was no pain or photophobia. On dilating the pupil with atropine synechiæ were noted. The patient stated that the trouble had been absent during the first eight months of a recent pregnancy, so that she supposed that she was cured, but that it had reappeared during the ninth month at the time when menstruation would have occurred. In five days, under the use of atropine, the hypopyon was absorbed and the eye presented its normal appearance. She had an easy accouchement and menstruated once without a return of the iritis, but before her next period the hypopyon reappeared. On this occasion Trousseau punctured the cornea and withdrew pus, which was subjected to a careful bacteriological examination, that showed it to be laudable as regarded septic qualities. The patient was placed on naphthol and quinine, with vaginal injections of carbolic acid. The following month a transient cloudiness of the iris was noted two days before the period, which quickly disappeared spontaneously, but with the next menstruation the attack was just as severe as before, and was repeated every month thereafter in spite of continued anti rheumatic treatment. The writer, after careful observation, was led to believe that the irido-choroiditis was of infectious origin, the seat of infection being within the uterus, and regretted that he had not made a bacteriological examination of the menstrual discharge, with the view of determining if it contained any septic element which was present only during the period. The fact that the ocular trouble was absent at the first menstruation after delivery would seem to support this hypothesis. Cohn has reported similar cases which occurred during the puerperium.

Prolapse of the Urethral Mucous Membrane in Young Girls.

Benicke (*Zeitschrift für Geburtshülfe und Gynäkologie*, Band xix. Heft 2) calls attention to this rare affection, of which he has seen three cases. Munzer published a paper on this subject, in which he referred to twenty-one cases, ten of the patients being between six and fifteen years of age. The diagnosis of the condition, as distinguished from a neoplasm, turns upon the cylindrical or funnel-shaped form of the mass which protrudes from the meatus. The symptoms are sometimes so slight that their cause might be easily overlooked. In the writer's three cases his attention was called to it, not by painful or difficult micturition, but by hæmorrhage during the act. The prolapsed mucosa was sensitive in two of the cases.

The etiology of this affection is somewhat obscure. The patients are usually of delicate constitution, and may or may not have had previous catarrh or irritation of the urethra, perhaps from oxyuria. Masturbation should be taken into account. Persistent cough, as during pertussis, is a possible etiological factor.

In one case, in which the prolapse was less marked, the patient was cured by an application of the cautery. In another an equally favorable result was obtained by replacing the prolapsed mucosa, and narrowing the urethra temporarily with sutures until the redundant tissue was reduced by repeated cauterization. If this does not succeed, the simplest plan is to excise the prolapsed mass and to suture the raw edges with catgut.

The Electrical Treatment of Cancer of the Uterus.

Wernitz (*Berliner klin. Wochenschrift*, September 22, 1890) limits this treatment to cases that are nearly, or quite, inoperable. A large, flat electrode being placed over the abdomen, and a ball electrode applied through a speculum directly to the diseased surface, a current varying from one to two hundred milliampères is passed for not longer than ten minutes; a *séance* is held daily or every other day. In some cases the growth is punctured with a platinum needle attached to the negative pole. When the positive pole is used a thin grayish slough appears at the point of contact, which separates within twenty-four hours, leaving a clean raw surface, that has less tendency to bleed; with the negative pole there is no visible slough, but a secretion of fluid.

Four cases are reported at length, in which the electrical treatment caused entire cessation of the pain, so that opium could be dispensed with, and marked improvement in the appetite and general condition. Sloughing and foul discharge ceased. The action of the current in these cases is probably two-fold, a local or chemical, whereby healthy granulation and cicatrization are promoted, and an electrolytic, in consequence of which there is a molecular disintegration and absorption of the cancer-cells in the deeper tissues.

PÆDIATRICS.

UNDER THE CHARGE OF

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The Buccal Phenomena and Complications of Measles in Children.

Cauvet (*Gaz. Méd. de Paris*, May 31, 1890) claims that during measles there may be two varieties of lesions of the mouth, one being due to the infection of the disease, the other being a superadded complication. The phenomena due to the infection of measles are of two kinds: 1st. Buccal erythema,

which is usually present at the same time as the nasal catarrh, and consists in a red spottiness, or a simple redness upon the tongue. It may be followed by desquamation of the tongue. 2d. Follicular stomatitis, due to glandular hyper-secretion with obstruction of the excretory canal, and coinciding ordinarily with the miliary eruption of the skin. These phenomena may be due to the poison of the disease, which is eliminated by the glands. The oral complications which are superadded to measles may vary in nature and gravity, and may show the following forms:

1. Muguet, which is the most frequent complication.
2. Aphthæ upon the tongue, the lips, or the internal aspect of the cheek.
3. Ulcerative stomatitis, which may follow rupture of the aphthæ, or may result from infection which has been superadded.
4. Diphtheria, which, as has been shown by Roux and Yersin, may develop whenever there is epithelial desquamation. There is frequently a lingual desquamation following buccal erythema. In other conditions, aside from measles, diphtheria is unlikely first to attack the tongue.
5. Gangrene of the mouth, which is a severe though rare complication.

To avoid these accidents antiseptic washes should be freely used for the buccal cavity. A saturated solution of boric acid will be found very serviceable for this purpose. The washes should be used from the very beginning of the disease, when there may be only a mild degree of erythematous stomatitis. These complications are much more common in hospitals than in private practice, and this is fortunate, for in hospitals they are much more likely to receive the attention that is required.

Croupous Pneumonia in Children and its Treatment.

Copasso (*Arch. Ital. di Ped.*, 1890) states that between the first week and the sixth year of life children are very susceptible to this disease. Those are especially predisposed to the disease in whom the thorax is undeveloped relatively to other parts of the body. Cutaneous erythema upon the trunk is one of the first symptoms, especially in severe cases, and is probably due to obstruction to the flow of blood toward the thoracic cavity. To the vascular obstruction are also due the albuminuria of the disease, the congestion of the liver, the spleen, and the brain, the softness of the tissues offering no opposition to the dilatation of the capillaries. In cerebral pneumonia the morbid process is usually limited to the left apex, while there is also œdema of the pia mater. The posterior portion of the lung is more decidedly affected than the lateral or inferior portions. Cardiac weakness may follow the disease, and the pulmonary vesicles very slowly resume their original form and volume. Caseation and tuberculization of the exudate in such young patients are rare, and so also are induration, suppuration, and gangrene. It is believed by the author that the theory of the infectious origin of the disease is a correct one. Salicine may not be given with safety at this period of life. Leeches may be used with advantage to the painful portions of the chest. Excitants of the nervous system and the heart, including red wine and quinine, also expectorants, may be prescribed.

Sydenham's Chorea, its Etiology and Character.

Leroux (*Rev. Mens. des Mal. de l'Enf.*, June, 1890) states that the period of development of this disease is from the eighth to the twelfth year, which is also the period of the so-called growing-pains, and frequently of rheumatism. From eleven to twelve—that is, in the pre-menstrual period, girls are more subject to chorea than boys, and it is also the period in which anæmia is very common. In 1888 the author saw 487 cases of anæmia, 395 in girls and 92 in boys. Between the ages of eleven and twelve one sees the largest number of cases of chorea, anæmia, and growing-pains, and in addition many cases of articular rheumatism. The question is raised whether one of these diseases will provoke the other and whether chorea is of a rheumatic nature. A rheumatic chorea has been described, but cases are so numerous in which chorea is evolved independently of rheumatism, that the possibility of a necessary relationship between the two diseases is questionable. Anæmia, infectious diseases, rapid growth, etc., predispose to chorea, but they also predispose to rheumatism. The author agrees with the opinion of Jouffray and Saric, that chorea is a cerebro-spinal neurosis of evolution—a neurosis of growth.

The Operative Treatment of Chronic Hydrocephalus.

Pott (*Jahrb. f. K.*, xxxi. 1, 2) claims that there are no difficulties which are technically insuperable in operations for chronic hydrocephalus. Not all cases of this condition are suitable for operation, and it is well to consider the probable results in favorable cases, especially in view of the fact that the results heretofore have not been very encouraging. All cases in which the intracranial effusion is extensive must be let alone, also congenital cases in which a rudimentary development of the brain is suspected, such cases being complicated with spina bifida or other serious lesion. In those in which, in spite of the hydrocephalus, the children are psychically and physically well developed, or at least were so before the enlargement of the cranium, an operation may be considered. Such children usually deteriorate slowly but steadily as the result of cerebral irritation or pressure. Any operative procedure in such cases will be the less dreaded when one realizes the gloomy prognosis if relief is not attempted. Such children become imbecile or idiotic; they do not learn to talk, or quickly lose whatever they may have learned. If the pressure continues total blindness will almost certainly result. In an advanced condition of hydrocephalus complicated movements of coördination, including walking, standing, or sitting, may be impossible. If walking is acquired the gait will be wavering and uncertain. Pareses, contractures, partial and general clonic spasms are ordinary occurrences. All these symptoms are more or less conditioned upon the accumulation of the ventricular fluid and the increase of endocranial tension. The circulation in the cranial cavity is weakened and retarded by the pressure and may be stopped. Functional disturbance will follow, and then pathological changes in the brain-substance. If the pressure is removed by arrest of the secretion and ossification of the cranium, restoration to health, to a certain extent, is possible. Most of those who recover suffer with atrophy of the brain and remain idiots for life. In a

case which was operated upon by the author great improvement followed each withdrawal of the fluid. The comatose condition passed away, the pupils reacted to light, the pulse became fuller and stronger, the breathing regular, and the desire for food returned. The entire condition of the patient was satisfactory until the appearance of pus in the cerebro-spinal fluid removed the hopes of success which had been experienced. If in any given case suppuration could be avoided, incision and drainage would furnish better prospects of success than any other plan of treatment which has been suggested.

PUBLIC HEALTH.

UNDER THE CHARGE OF

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The Microbe of Malaria.

Dr. F. Plehn, in the *Zeitschrift für Hygiene*, Bd. viii., H. 1, 1890, gives an account of some researches of his in this subject, and a history of the opinions entertained by others during the last twelve years.

In 1879 Klebs and Tommasi-Crudeli described a bacillus found by them in the water and soil of the Roman Campagna, which they were led by certain experiments to look on as the microbe concerned in the causation of malarial fevers.

In 1880 Laveran found in the blood of a subject of malaria in Algiers an organism, not present in that of healthy persons, which he called *Plasmodium*, and maintained to be the essential agent of the disease, in opposition to Klebs and Tommasi-Crudeli.

Ziehls in 1882, and von Sehlens in 1884, discovered bacilli and cocci in the blood of malarial persons in Italy, but made no experiments. Previously to 1880 Koch's method of pure culture was unknown, and though Klebs and Tommasi-Crudeli had never found the bacilli in the blood of patients, the transfusions of Dochmann, Gerhardt, Cuboni, Golgi, and Marchiafava were considered to be conclusive. But the Nestor of bacteriologists, Fred. Cohn, has since deprived the bacillus of all claims to a pathogenic character, Klebs himself has at last disowned his fondling, and Marchiafava and others have gone over to the other side.

Laveran's conclusions have been supported and vindicated by the observations and experiments of Marchiafava, Celli, and Colgi in Italy, Metschnikof, Czenzinski, and Sacharof in Russia, Sternberg, Councilman, and Osler in America, and of Laveran himself in Corsica, Tonkin, Madagascar, and Senegal, whose combined experience has established its claims almost beyond question, though Dujardin, Pfeiffer, Rosenstein, and Hoffmann have alleged that the *plasmodium* is present in the blood in other febrile conditions, as

typhoid, scarlatina, and vaccinia, and that it is, therefore, to be looked on rather as a modification of some of the normal elements.

Fischer, of Kiel, examined the blood of eighty subjects of malaria from the Cameroons, West Indies, etc., and Schellong that of a large number of patients in New Guinea, and, since his return to Germany, of cases of recurrent attacks, with none but negative results. It must, however, be borne in mind that the value of negative evidence is at a minimum when the object of the search is new, and only to be detected by special methods of examination and staining demanding much technical skill and practice.

Dr. Plehn, after nine months' preparation as assistant in the Hygienic Institute at the University of Jena, began his observations at the Moabit Hospital in Berlin, on three cases of typical intermittent fever in which the several stages were well marked, the temperature reaching a maximum of 41° C. (105.8° F.) and respectively of the quartan, tertian, and quotidian forms—the last, however, subsequently passing into the tertian. The two former, from Hamburg and Posen, gave negative results, but he was successful in the case of the last, a laborer from Potsdam, who had suffered for two months from severe quotidian ague, for which he had had no medical treatment, having been refused admission to the hospital there from want of room. It is worthy of notice that after this man had been treated with large doses of quinine, and the quotidian had been succeeded by the tertian form, the plasmodia rapidly decreased in numbers and soon disappeared entirely. This may account for the failure of many observers, to say nothing of the paucity of material at the disposal of most compared with the opportunities enjoyed by Italian physicians, among whom Celli and Guarnieri, for instance, have treated as many as 2000 patients in one summer.

In the Potsdam case Plehn found the plasmodia in abundance in all stages of the disease, but especially during the febrile exacerbations. Only the smaller were colorless, the larger being pigmented by granules and rods of melanin irregularly disposed. For the details of his manipulation we must refer to his paper.

In a postscript he states that since going to press he has also found the plasmodia in great numbers in the blood of a recurrent case returned from Sumatra, and that he intended continuing his observations on every opportunity.—*Zeitsch. f. Hyg.*, 1890.

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